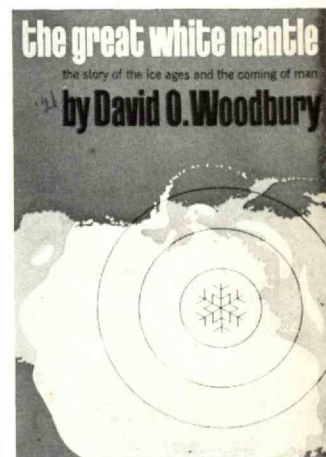
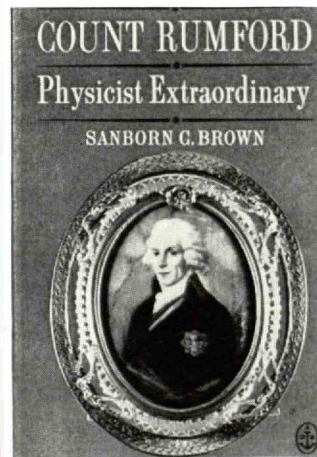
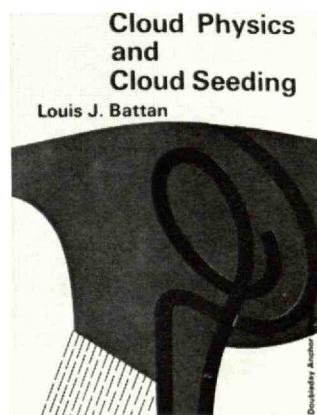
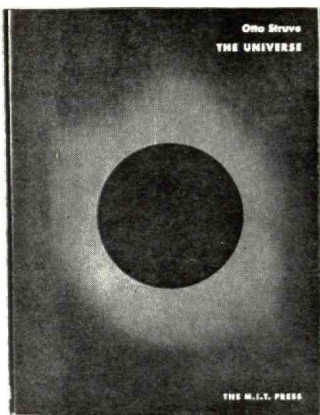
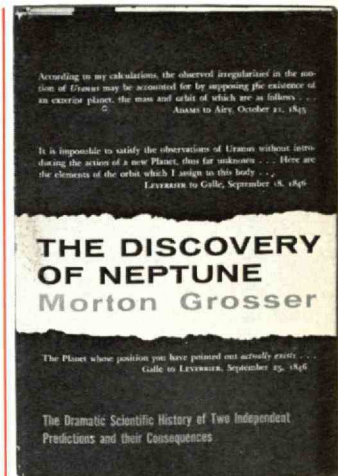
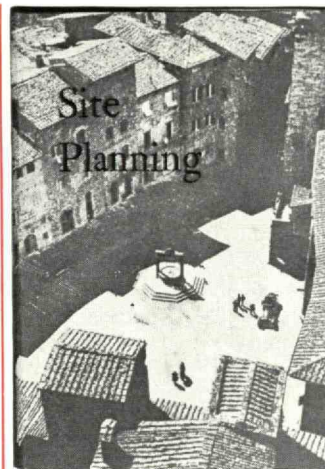
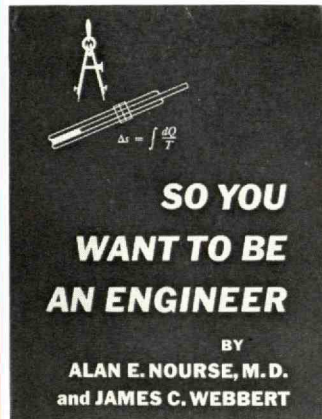
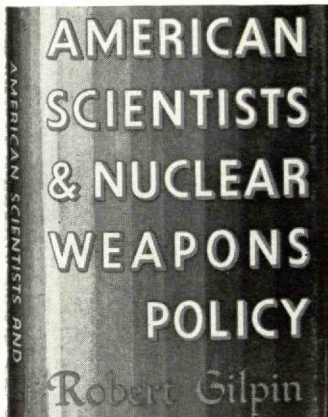


Technology Review

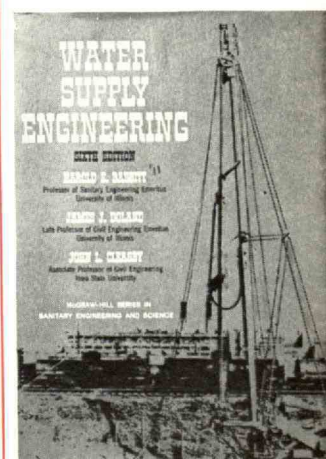
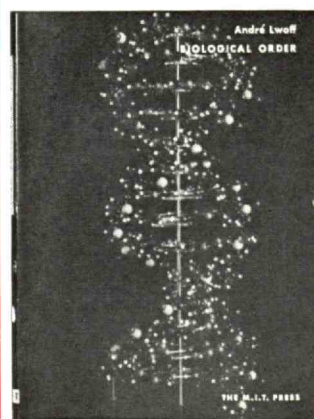
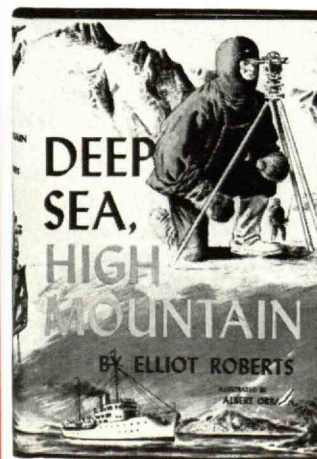
Edited at the
Massachusetts Institute of Technology

December, 1962



Winter
Evening
Reading

A special book issue



technology review

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"CHARGED PARTICLES"

Nuclear-Structure Research

Initial work with the 12-Mev Tandem Van de Graaff has confirmed beyond expectations our early conviction that this accelerator system would greatly extend areas of useful research. A previously "dark" area, in fact the whole upper half of the periodic table, can now be investigated with precision. The range now beginning to be explored with extremely stable monoenergetic particle beams includes many isotope-rich elements and the important domain of fissionable materials. Current research indicates the Tandem has increased the number of resolvable energy levels by an order of magnitude. In constructing a theory of the nucleus, the precision we speak of is every bit as important as the extension in energy. Tandem ion beams permit discrimination between closely associated energy levels and reveal new subtleties in the fine structure of heavier elements.

The Tandem Van de Graaff's external ion source at ground potential is a boon to experimenters. There are at least seventeen stable nuclei up to oxygen that may be used as bombarding particles. With multiple stripping and two-stage acceleration, oxygen ions have been accelerated to 60 Mev.

A characteristic of truly new research tools is evident in the way the Tandem is shaping the direction and objectives of physics research programs. As a result, nine laboratories with machines installed and performing to specifications, and others awaiting Tandem delivery, are planning to undertake work that is new and challenging.

At High Voltage, a vigorous engineering and development program is extending the basic Tandem principle to higher energies and beam currents. Already in the process of construction are several "King-Size" Tandems (7.5 million-volt terminal potential) pro-

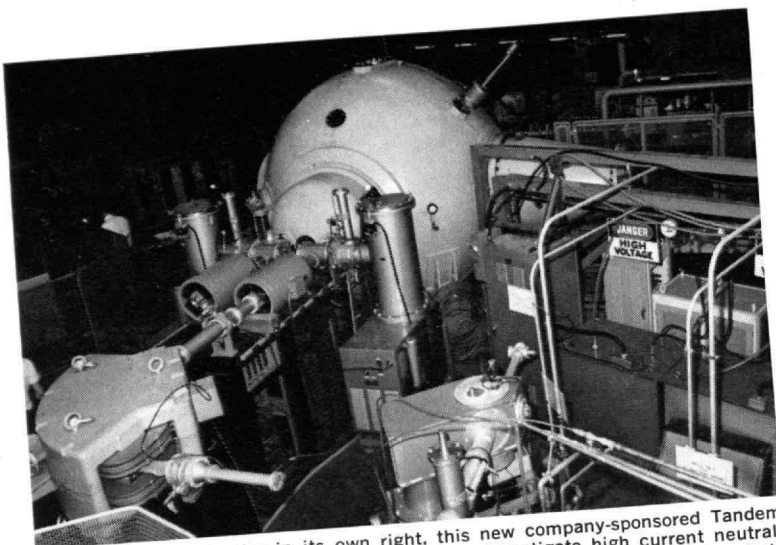
viding 15 Mev protons, and much higher energies with multiply-stripped heavy ions. The new "Emperor" Tandem design will generate 10 million-volts for two-stage acceleration of 20 Mev protons.

The concept of heavy-ion acceleration opens up a new area to the experimenter. The acceleration of 200 Mev bromine ions, while retaining control in energy and homogeneity to a few kev, is feasible. The implications for nuclear structure research are quite profound. Certainly, new aspects of multiple coulomb excitation and nuclear-fission processes are among the realms that can be advantageously explored.

Three-stage Tandem acceleration extends the Proton energy capability of the Tandem principle to well over 30 Mev. The new Research Tandem at High Voltage is being pressed to develop ion sources with outputs that are orders of magnitude greater than currently available.

"Low-Energy" Physics

As we address ourselves to this subject, more elegantly called *nuclear-structure physics*, the reader



A formidable accelerator in its own right, this new company-sponsored Tandem development facility is designed specifically to investigate high current neutral, negative, and positive ion sources. It is an important empirical tool in the study of beam dynamics, pulsing techniques, and acceleration tube design.

may conclude we have an axe to grind, and we admit it. We believe a great deal of research remains to be done on light nuclei. There is, for example, time-consuming but rewarding precision nuclear spectroscopy to fill in gaps in existing energy level data, as well as new research related to the conservation of isotopic spin, excitation energies of low excited states and direct interaction mechanisms.

Because much nuclear-structure research can be accomplished with standard Van de Graaffs in the 1-6 Mev energy range, equipped with ion sources for hydrogen, helium or heavy elements, these machines represent ideal research instruments for the university physics laboratory of modest proportions. We are presently compiling information on exactly where machines of moderate cost and energy can make significant contributions in illuminating concepts of nuclear structure and would be happy to discuss this subject with you.

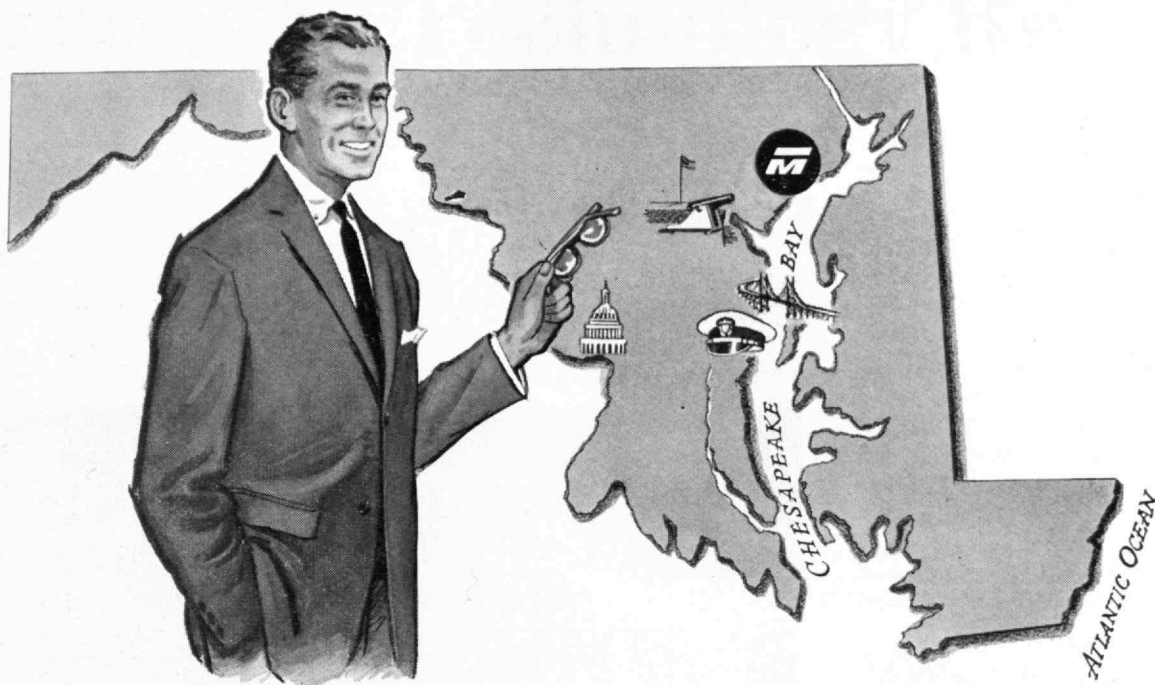
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giving brief outline
of your education and
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Rocket Propulsion Analysis	Guidance and Navigation
Elevated Temperature	Systems
Structural Analysis	Launch & Control Systems

ELECTRONIC SYSTEMS AND PRODUCTS DIVISION

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Guidance and Navigation	Human Factors
Microwave	Solid State Circuitry
Reconnaissance	Modern Packaging
Command and Control	Data Processing

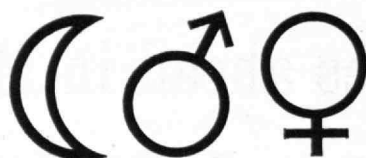
NUCLEAR DIVISION

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Hazards Analysis	Marketing
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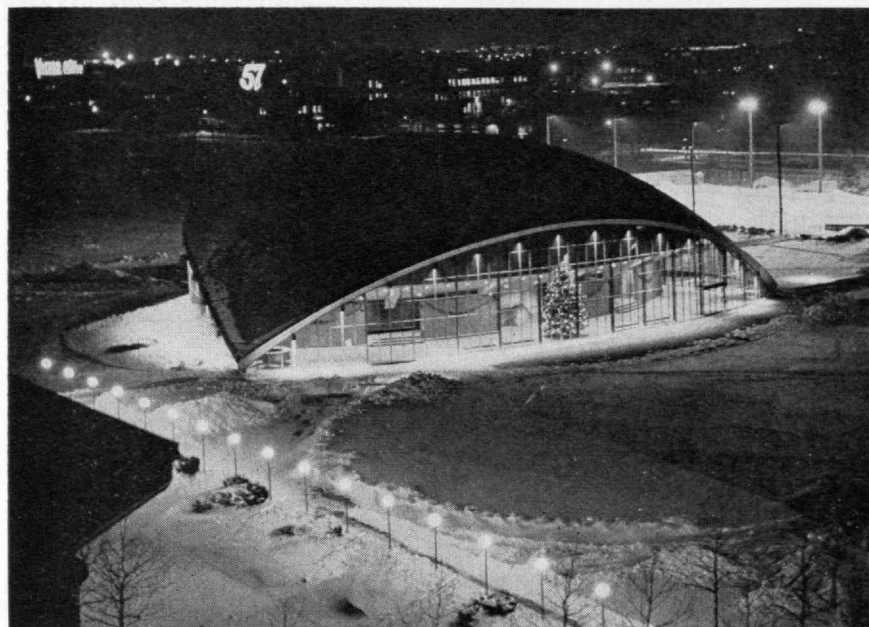
The Moon, Mars, Venus, long objects of wonder, are now destined for exploration. 📌 As you read this, Bellcomm is at work for NASA—planning early phases of this vast exploration, analyzing systems needed for landing man on the moon. 📌 If you're qualified, you might like to join the vanguard of the expedition. There are rewarding openings in the fields of physics, mathematics, engineering, flight mechanics, propulsion, man-machine relationships, aerodynamics and aeronautical engineering. 📌 Bellcomm, the newest company of the Bell System, is an equal opportunity employer located in Washington, D. C. Résumés will be promptly and carefully considered. Address them to Mr. W. W. Braunwarth, Personnel Director, Bellcomm, Inc., Room 501N, 1737 L Street, N.W., Washington 6, D. C. 📌



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☾♂♀ Left to right, above, astronomical symbols for the Moon, Mars, and Venus.



Seventy-five years ago (see page 30), M.I.T. men got no Christmas vacation. This year's holiday period begins on December 22 and ends January 6, and there'll be trees such as this one in the Kresge lobby for those on campus.

TECHNOLOGY REVIEW is published monthly from November to July inclusive, on the 27th day of the month preceding the date of issue, by the Alumni Association of the Massachusetts Institute of Technology. All correspondence regarding its editorial contents, subscriptions, advertising, and changes of address should be addressed to:

Room 1-281, M.I.T.,
Cambridge 39, Mass.

The Review's publisher and editor is *Volta Torrey*; business-manager, *R. T. Jope*, '28; assistant to the editor, *Ruth King*; and class news editor, *Roberta A. Clark*. Editorial consultants are *J. J. Rowlands*, *Francis E. Wylie*, and *John I. Mattill*. Members of its business staff are *Madeline R. McCormick* and *Patricia Fletcher*.

Officers of the Alumni Association of M.I.T. are: *William L. Taggart, Jr.*, '27, President; *Donald P. Severance*, '38, Executive Vice-president; *Carroll*

L. Wilson, '32, and *F. Leroy Foster*, '25, Vice-presidents; and *Frederick G. Lehmann*, '51, Secretary.

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Contents December, 1962

This issue is devoted largely to books by or about M.I.T.'s people and work. The jackets on its cover suggest the variety of such volumes now appearing. The books chosen for emphasis can be read for both pleasure and enlightenment without extensive previous study.

Features

- | | |
|--|-----------|
| Publishing at M.I.T. | 11 |
| Carroll G. Bowen outlines his plans as Director of The M.I.T. Press. | |
| Knowledge and Wonder | 19 |
| An excerpt from a popularization of science by Victor F. Weisskopf. | |
| The Poor Rockefellers | 21 |
| Recollections of life at M.I.T. by a debonair alumnus. | |
| Phosphates vs. Tooth Decay | 27 |
| Juan M. Navia, '50, summarizes some findings in recent research. | |

New Books

- | | |
|--|-----------|
| The Universe | 14 |
| Compton lectures by Otto Struve. | |
| The Great White Mantle | 15 |
| By David O. Woodbury, '21. | |
| Site Planning | 16 |
| By Kevin A. Lynch, '47. | |
| Revolution in Electricity | 16 |
| By Martin Mann, '41. | |
| Colonial Vessels | 17 |
| By William A. Baker, '34. | |
| So You Want to Be an Engineer | 17 |
| By A. E. Nourse and J. C. Webbert. | |
| Biological Order | 18 |
| Compton lectures by André Lwoff. | |
| <i>Additional reviews and items about books are on pages 37 to 44.</i> | |

Departments

- | | |
|--|-----------|
| Individuals Noteworthy | 4 |
| Appointments, honors, and other news of M.I.T.'s Faculty and Alumni. | |
| The Trend of Affairs | 25 |
| Progress is reported in optical maser and lunar radar research. | |
| Institute Yesteryears | 30 |
| H. E. Lobdell, '17, culls the records to revive memories. | |

Individuals Noteworthy

Godfrey L. Cabot: 1861-1962

THE OLDEST ALUMNUS of M.I.T. and a member of its Corporation for 32 years, Godfrey Lowell Cabot, '81, died on November 2 at the age of 101. Dr. Cabot entered M.I.T. as a student in 1877, joined its Corporation as a term member in 1930, and became a life member in 1936.

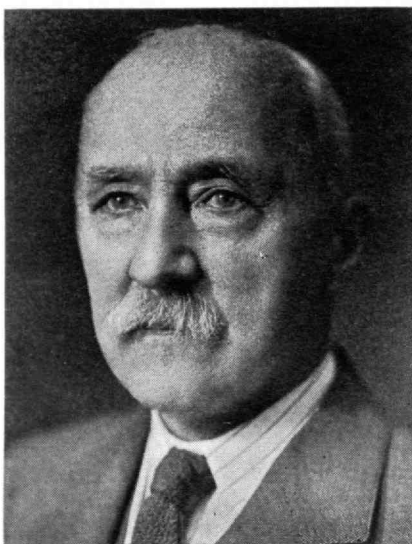
Dr. Cabot's father was one of those who petitioned the General Court to set aside land for the Institute; his brother, Samuel Cabot, '70, was one of the first group of students to enter it; and his son, Thomas D. Cabot, has been a member of its Corporation since 1946.

After studying at M.I.T., Dr. Cabot went to Harvard, where he was graduated *magna cum laude* in chemistry in 1882. He then continued his education at Zurich Polytechnicum and the University of Switzerland. He established himself as a consulting chemist in Boston in 1885, and began the manufacture of carbon black in 1887 by a process which he patented. The firm that he founded and its successor, the Cabot Corporation, became one of the world's largest manufacturers of carbon black. It also produces crude oil, natural gas, gasoline, and other chemicals.

Dr. Cabot's intense interest in the advancement of science and engineering never ceased. He was an early enthusiast for aviation and learned to fly when he was 54. Solar energy was another of his especial interests, and he established a \$647,000 fund at M.I.T. in 1930 to support solar-energy research for 50 years. This fund has underwritten both fundamental research in photochemistry and thermal electricity and the construction of solar-heated houses.

The recipient of many honors, and a leader in both professional and civic organizations, Dr. Cabot was not only a member of the M.I.T. Corporation but also a trustee of Northeastern University, Norwich University, and Morris Harvey College.

"He was one of the great citizens of Boston and of the nation," President Julius A. Stratton, '23, ob-



Godfrey Lowell Cabot, '81

served when the flag flew at half-staff at M.I.T.

His survivors include two sons, John Moors Cabot, who is U.S. Ambassador to Poland, and Thomas D. Cabot; a daughter, Mrs. Ralph Bradley; 14 grandchildren and 33 great-grandchildren.

New Life Member

JOHN J. WILSON, '29, a term member of the M.I.T. Corporation since 1958 and Secretary since 1959, has been elected as a life member of the Corporation. Mr. Wilson was president of the M.I.T. Alumni Association in 1958-1959 and general chairman of the Second Century Fund campaign begun in 1960. Much of his time has been given to the Institute for the last three years.

He is also a trustee of the Boston Museum of Fine Arts and Peter Bent Brigham Hospital and an incorporator of The Children's Hospital and the Boston Museum of Science. He was formerly president of the Doelcam and Datamatic Corporations and vice-president of Minneapolis-Honeywell Regulator Company, and is now a director of Minneapolis-Honeywell, State Street Bank & Trust Company, United-Carr Fastener Corporation, St. Croix Paper Company, The Electronic Trust Limited (London), and Controls for Radiation, Inc.

To Head Humanities

RICHARD M. DOUGLAS, who was formerly associate professor of history at Amherst College, has been appointed professor of humanities at M.I.T. and will succeed Professor Howard R. Bartlett as Head of the Department of Humanities in February.

Born in Cleveland in 1922, Professor Douglas has degrees from Princeton and Harvard. He taught at the College of Wooster and Brown University and was a Fulbright Fellow before going to Amherst. There he was a member of the 1959 curriculum review committee. He was awarded a Faculty Fellowship by the Social Science Research Council in 1962 which he resigned to come to M.I.T.

Professor Douglas' scholarly interests have been in early modern European history, the Renaissance, and the Reformation. He is the author of *Jacopo Sadoletto: Humanist and Reformer*, and a member of the American Historical Association and the American Renaissance Society. During World War II, he was a captain in the U.S. Marine Corps.

A Gift for Diplomats

MRS. KATHERINE DEXTER McCORMICK, '04, donor of the women's dormitory now being built at M.I.T., has given the U.S. State Department a Swiss chateau about 12 miles from Geneva. In reporting the gift, the Associated Press said her objective was to provide a better meeting place for U.S. diplomats in Geneva, and that it was one of the largest donations from a private individual ever received by the State Department.

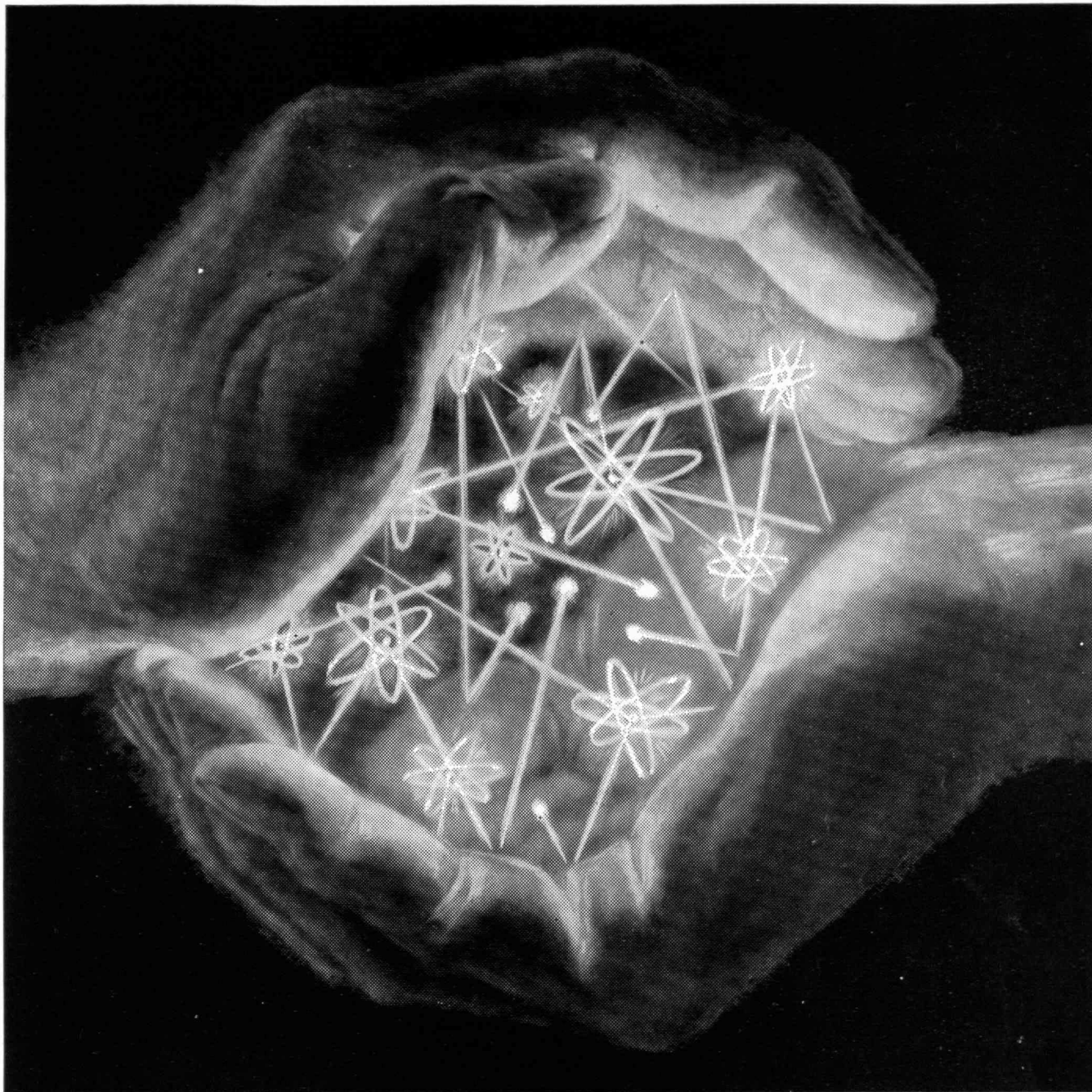
Dr. Killian Recuperates

THE CHAIRMAN of the M.I.T. Corporation, James R. Killian, Jr., '26, underwent surgery for a urinary tract condition at New England Baptist Hospital in mid-October. He was convalescing early in November, but keeping in close touch with M.I.T. associates by telephone.

President-Elect

RICHARD C. LORD, Professor of Chemistry and Director of the M.I.T. Spectroscopy Laboratory, will be President-Elect of the Optical Society of America in 1963.

(Continued on page 6)



Splitting atoms . . . under control

Inside a nuclear reactor, atoms are split by nuclear "bullets" or neutrons flying at 5000 miles per hour. Vast amounts of energy are released. In many of today's reactors, the secret of controlling this chain reaction and putting it to work lies in a special form of carbon known as graphite. Graphite slows down the neutrons to a working speed and keeps them within the reactor core where they can split more atoms to generate useful heat. ► And the hotter the better, because graphite grows even stronger at high temperatures! That's why graphite is also used inside rocket and missile engines to withstand the searing blast of burning fuels . . . and on nose cones and other critical surfaces to protect against the intense heat caused by air friction. ► Under the trademark NATIONAL, Union Carbide has been making carbon and graphite increasingly useful to industry for more than fifty years. It is only one example of how the people of Union Carbide are constantly striving for a better tomorrow.

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Individuals Noteworthy

(Continued from page 4)

Provost's Assistant

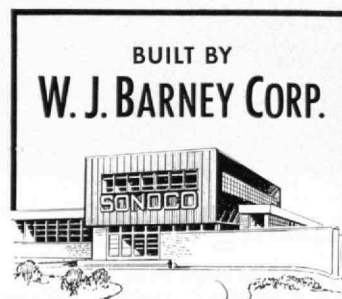
JACK H. FRAILEY, '44, has joined the M.I.T. staff as Special Assistant to the Provost and will succeed Associate Dean Thomas P. Pitre as Director of Student Aid upon the latter's retirement next July.

Mr. Frailey served in the Navy after receiving his bachelor's degree, returned to M.I.T. for a master's degree in 1947, and became a Group Leader in the Naval Supersonic Laboratory on Project Meteor. He continued work in the Flight Control Laboratory, directed a program of investigating aircraft armament systems, and received the degree of Aeronautical Engineer. In 1955 he was project engineer at Lockheed for the X-7A Ramjet Test Vehicle and project director for Polaris. He returned to New England in 1956 with the Radio Corporation of America and joined Itek Corporation in 1960.

As an undergraduate he captained the varsity crew, and since 1959 has been head rowing coach.

Dean Pitre, who will retire next summer, became the Institute's first Director of Student Aid in 1951, and has been largely responsible for development of M.I.T.'s extensive scholarship and loan programs.

(Continued on page 34)



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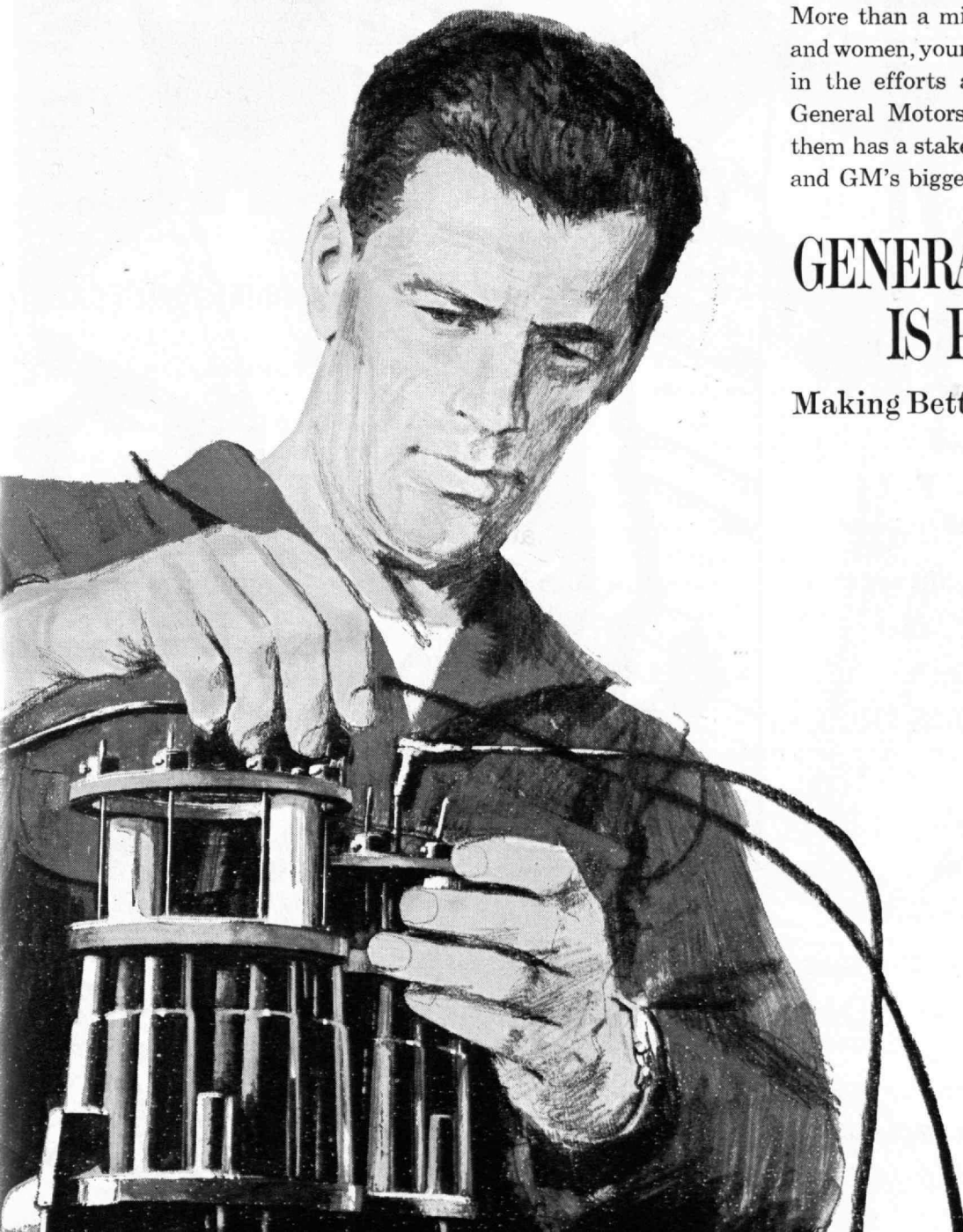
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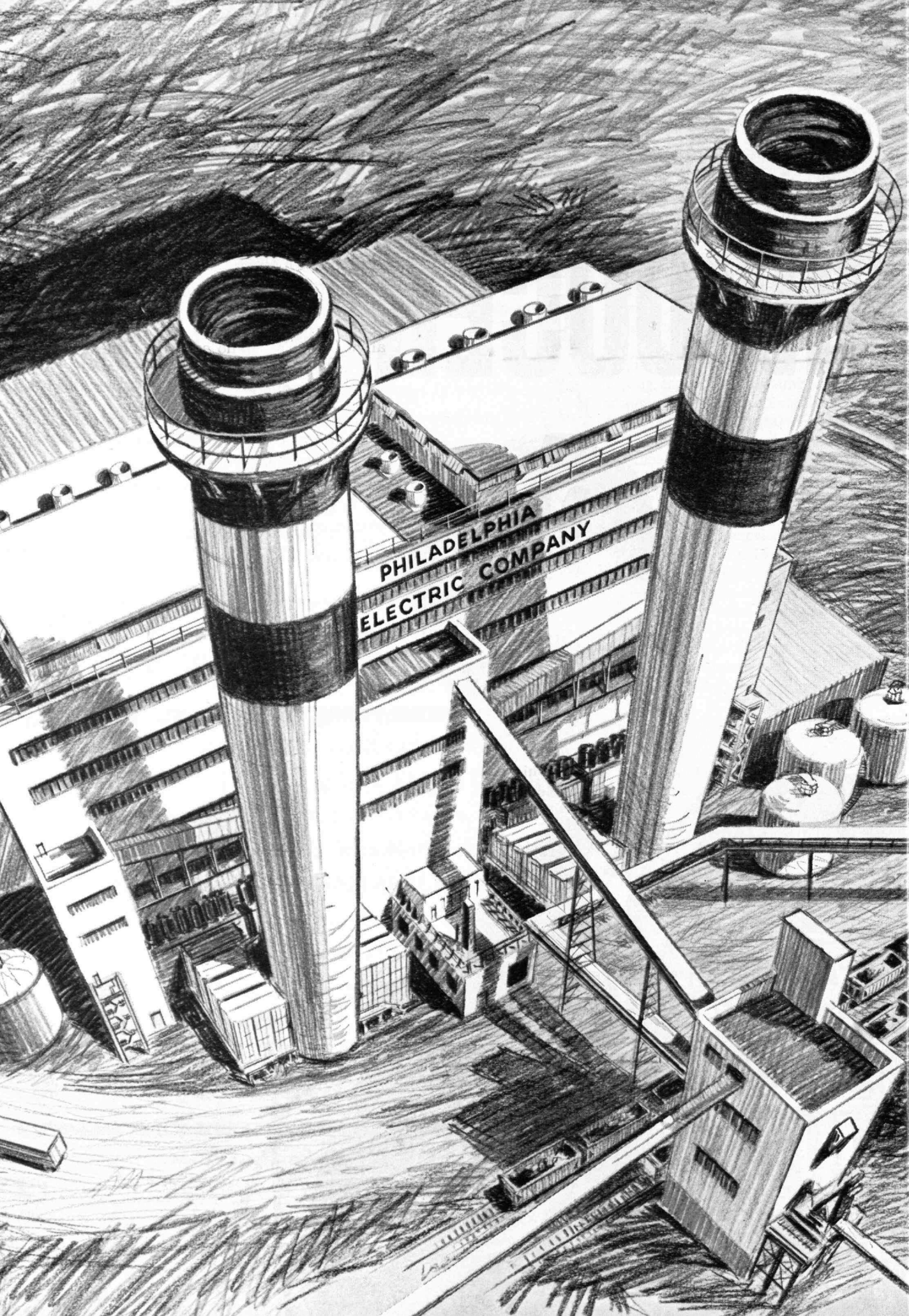
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vacuum the rugs and accomplish the long list of other chores the American housewife now relies on electric energy to perform. And—at the end of a busy day—Eddystone has enough fuel left in the bag to provide sufficient electricity for an evening of television entertainment.

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- The country's first 1,000,000 kilowatt steam generator (the world's largest).

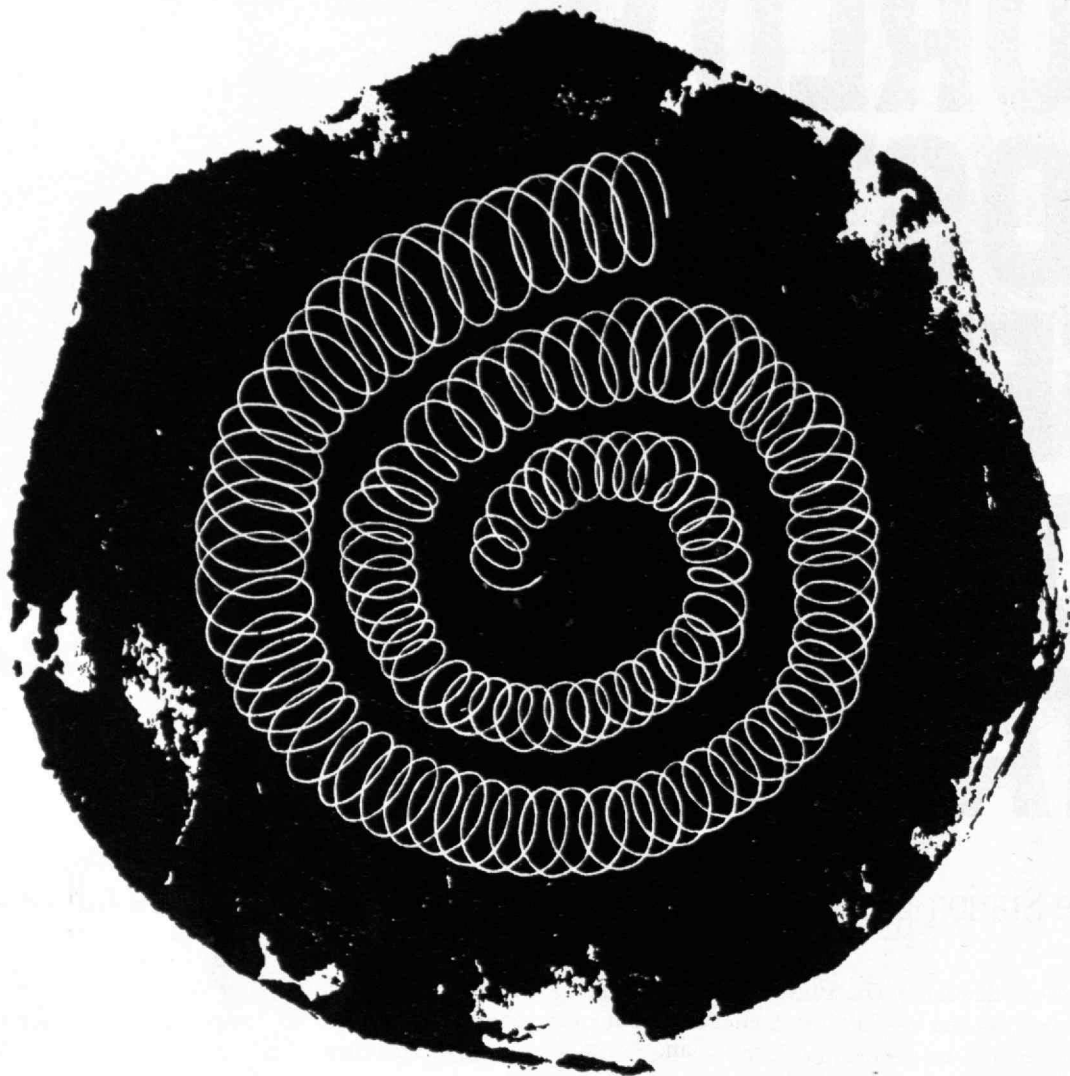


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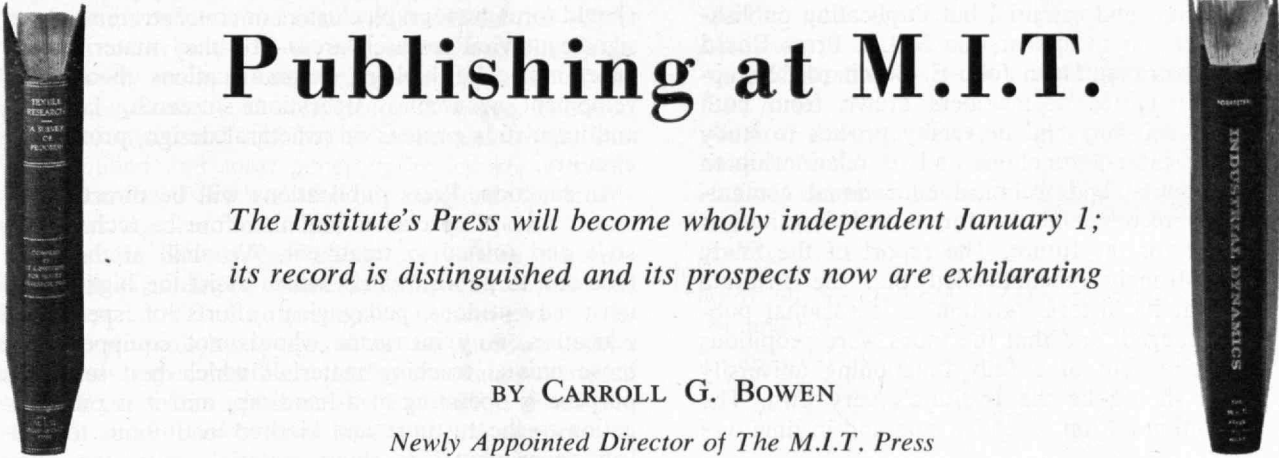
Lockheed Missiles & Space Company is located on the beautiful San Francisco Peninsula, in Sunnyvale and Palo Alto, California. Why not investigate future possibilities at Lockheed? Write Research and Development Staff, Dept. M-30D, 599 North Mathilda Avenue, Sunnyvale, California. An Equal Opportunity Employer.

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BY CARROLL G. BOWEN

Newly Appointed Director of The M.I.T. Press

BY NEW YEAR'S EVE, 1962, after all books bearing the joint imprint of The M.I.T. Press* and Wiley have been shipped to the warehouses of The Colonial Press at Clinton, Mass., after all accounts and reckonings of business mutually undertaken by John Wiley & Sons and Massachusetts Institute of Technology have been settled in gentlemanly fashion and drunk thereupon, and as all parties to this joint undertaking—authors, editors, teachers, students, designers, and salesmen—settle themselves to see the old year out, The M.I.T. Press will quietly enter a new phase in its development.

Calculated decisions taken years ago ensured that the scholarly press of M.I.T. primarily would serve the Institute, and then only when necessity dictated. The Institute had functioned well throughout the years before 1932 without a sponsored press of any kind by using the imprints of commercial publishers or of other learned institutions. When founded by James R. Killian, Jr., '26, then editor of *The Technology Review*, the Press charted a most selective course. The deliberate scale of publication during those early years is clear from a calling of the roll:

- 1932 E. R. Schwarz, Ed.: *Textile Research: A Survey of Progress*
- 1933 R. E. Rothe, F. Ollendorff, K. Pohlhausen: *Theory of Functions as Applied to Engineering Problems*
A. F. Bemis and John E. Burchard: *The Evolving House* (Vol. I): *A History of the Home*
- 1934 W. Spannhake: *Centrifugal Pumps, Turbines, and Propellers*

A. F. Bemis: *The Evolving House* (Vol. II): *The Economics of Shelter*

1935 no publications

1936 A. C. Hardy: *A Handbook of Colorimetry*
O. Franzius: *Waterway Engineering*

A. F. Bemis: *The Evolving House* (Vol. III): *Rational Design*

In 1937, John Wiley & Sons by agreement with the Institute took charge, as it were, of all publishing functions of the Press save the selection of manuscripts for publication. It was a unique co-operative arrangement and for a quarter century offered Press authors broad domestic and international distribution, as well as high standards of manuscript editing and book production.

Under the joint imprint appeared reference publications such as G. R. Harrison's *Wavelength Tables* (1939), still in print; experimental texts such as the M.I.T. Electrical Engineering Series and E. A. Guillemin's [24] *Circuit Analysis*; pioneering outlines of new fields, such as P. M. Morse and G. E. Kimball's *Methods of Operations Research*; and a challenging study by Norbert Wiener, *Cybernetics*. If the last has become the most widely known of the joint imprint titles, T. S. Gray's [29] revision of *Applied Electronics* found the broadest market utility, and laid the financial foundation for the modern M.I.T. Press, making possible nearly half a hundred research publications, and these publications in turn fashioned a very different role for the Press at M.I.T.

There was, I am told, within the Institute from the very beginning sentiment favoring the development of an M.I.T. Press after the pattern of a university press. What is clear from the record is that both university press publishing in America and the Institute changed greatly from 1937 to 1962, the former aggregate developing distinctly sharper professional publishing

* In February, 1961, the name of The Technology Press was changed by action of its board to The M.I.T. Press.

skills and relying less and less upon university subsidies in order to survive; and the latter broadening and redrafting its teaching purposes and its research commitments. So it became appropriate for the Press to reinvest income derived from sales of joint imprint publications in the publication of research monographs, many of a form and market character that in some sense were unwieldy in the highly developed commercial publishing practices of John Wiley.

As separate and distinct publishing programs developed under the direction of Associate Professor Lynwood S. Bryant, and essential but duplicating publishing services began to appear, the M.I.T. Press Board through its chairman, Dean John E. Burchard, '23, appointed a committee of members drawn from both commercial publishers and university presses to study the Press, its present functions and its relationship to the total scientific and technical educational community, and to recommend the forms and functions it should adopt for the future. The report of the Study Committee strongly recommended that the Institute recognize that its historic position as occasional publisher had changed, and that the times were propitious for the development of a fully functioning university press which should be the Institute's very own. The recommendation fell on receptive ears and in time was so ordered.

The concluding act of separation will take place as stated on December 31, but preparations for implementing the committee's recommendations have been under way for some time. The M.I.T. Press has already grown editorial services to provide manuscript preparation for its own publications, and more recently has come to oversee the manufacture of its publications. But it now faces the necessity of replacing the domestic and foreign sales affiliations and the business services which were well provided by Wiley. The resources, however, upon which the Press will draw—its authors, its staff, and that indefinable but essential commodity, institutional good will—should enable it to develop and maintain essential book publishing services. To those of you who are editors and authors, present or potential, I offer these comments on the nurture and care of Press books.

Book Planting

The greatest danger confronting a university press is that of operating solely as a reflex, functioning quietly, smoothly, even uncritically, as the end mechanism of the research system. But, just as the effective research endeavor must be both discretionary and purposive, so

The M.I.T. Press must vigorously give shape to its list and rigorously exercise the selective skills available to its staff and its board. Commercial publishers seeking a book can use a shotgun; the scholarly publisher must use a rifle. The former may publish hundreds of new books each year. We shall publish two to four books each month. The books published by the Press will arise not only from science and technological research, but from work in architecture and the arts, the humanities and the social sciences. However, from these broadly diverse subject areas, the scholarly publications should form monograph clusters or concentrations about significant vital research areas—be they materials science, molecular biology, communications theory, development economics, operations research, language and linguistics, process or structural design, prosody or circuitry.

In function, Press publications will be directed primarily toward specialists and therefore be technical in style and formal in treatment. We shall at the same time aim to publish works which assist the highest and most adventitious pedagogical efforts of specialized education. Any instructor who is not equipped with those unique teaching materials which best serve his purpose is operating at a handicap, and it is our obligation to the Institute and kindred institutions to publish experimental teaching materials with the same vigor and pride we hold for our monographs.

A specialist, we have learned, is a layman in every field other than his own. Each scholarly publisher must decide for himself what measure of cultural investment he will undertake for contributing to the further education of all educated men. The M.I.T. Press must encourage and support competent research scholars in the preparation of general, nontechnically styled, expositions of their own work at some interval in their mature careers. We have in the Karl Taylor Compton Lectures and in our M.I.T. Undergraduate Seminar Program two excellent avenues to such publications, and more must be devised.

Book Cultivation and Harvest

The heavy investment in thoughtful editorial evaluation and careful manuscript preparation characterizes and in measure distinguishes the scholarly publisher. The imprint of The M.I.T. Press or any other university press cannot inherit lasting significance or prestige; it can earn them only through diligent and enlightened exercise of the fundamental review of manuscripts it elects to consider for publication. Responsible and imaginative reviewing costs more, in time and money,



Sketches from the jacket of "Transmission of Information, A Statistical Theory of Communications," by Robert M. Fano, '41.

but rare is the work of scholarship—indeed, of serious nonfiction—that could not benefit from reflective judgment, whether applied by the publisher or by one of the author's professional colleagues. Candor makes such a system function, and the Press seeks to provide an atmosphere in which both author and critic can gain from the exercise of the manuscript review.

Both before and after submission of his manuscript for publication, an author may gain from the Press direction and instruction about desirable practices in manuscript preparation. We spend, as do other university presses, rather more than we should in this effort. We will not write the books for our authors, but we do energetically strive for high standards of clarity of exposition, accuracy and consistency of usage, cohesion in organization, and legibility of charts and tables. Our best-qualified and most generous critics are our authors; don't take our word for our standards for manuscript editing, but ask them.

There are gloomy predictions everywhere concerning the brief, unhappy future awaiting the clothbound, letterpress book, but no practical alternative to it is in sight. So we shall continue to serve the traditional while incessantly experimenting with the innovational modes of book production. Historically The M.I.T. Press has utilized good bookmaking materials in support of well-designed text pages and readable type faces. Together with the University of California Press and the University of Washington Press, we enjoy singular experience in using typewriter composition for selected books, notably our research monograph series. It has seemed to us, and to our authors, that this technique offered composition at low cost and held the further advantage of utilizing operators who could work under our direction; until yet better alternatives appear, we shall continue typewritten photo-offset editions.

We have given thought to publishing in forms other than the book. Each time another manuscript arrives, and we find that it consists largely of tabular material—as for example, programs for computers—I wish that we possessed alternatives to the book. If any of you who are reading this article has either experience in or suggestions for publication in the form of input materials that could be given to computing machines in order to deliver unique copies of printed output, printed at up to 35,000 characters a minute, I should like to hear from you. All I can report to date is that we have published books composed by computers and then photographically reduced to book-page size—all at a reduction in error and cost over human typing and typesetting.

Book Marketing

University presses were once inaccurately characterized as publishers of unsalable books. We still publish books for narrow markets of, say, 1,000 to 5,000. But we know better now just how we can get word of our publications to interested and potential buyers. Specialist and professional tribes and orders are better organized too these days, and almost all learned hierarchies possess an Addressograph, Speedamut, Elliott, or some other high-speed addressing device for conveying, at a price, our book news to their membership. We try to provide our prospective book buyer with the facts, including the name of our author, his intellectual bloodline and academic heritage, some notice of his previous work, and

THE NEW DIRECTOR of The M.I.T. Press, Carroll G. Bowen, who discusses its history and prospects in this article, came to M.I.T. last fall from the University of Chicago Press, where he was assistant director. Graduated with honors from Swarthmore in 1948, he has worked with the Oxford University Press, helped to establish the *Galaxy* paperback series, and represented the U.S. Department of State in Bangkok as a specialist in scholarly publishing.



above all, an accurate, general description of the content and purpose of his book. Our reference shelf boasts no dictionary of superlatives. We shall spend most of our money on the most accurate and useful catalogues we can devise. We shall undertake to place individual promotion pieces on all new books in the hands or on the desk of every potential buyer for that book. We shall spend very little on space advertising in magazines and newspapers. In that world replete with demons and rich in divinations, the Press finds too few controls by which it may relate sales to space advertising, and prefers to rely on its own experimentally derived insight, that direct-mail promotion impels more sales at lower cost than does space advertising.

There are roughly 2,500 bookstores in the U.S., of which perhaps 300 will carry selected technical and scientific titles, and less than 100 that will stock the scholarly book. Crude as such generalizations are, it is apparent that both direct and retail book sales must be sought. Announcement of a Press book by mail appropriately will thus invite an order which may be placed either at the buyer's bookstore or sent to the Press. At the same time, the Press has adopted discount schedules equal to those established by the most generous publishers of technical books, in order to further the extensive development of merchandising technical and professional books. Such discounts buy shelf space for our books until, hopefully, they find buyers. And when our book buyer goes into or telephones his store, it means that the book will be his in a matter of minutes or hours, rather than a week or so later.

The overseas market for scientific and technical books is well established. Our problem is that of a small publisher seeking effective arrangements for conducting such transactions. Some experimentation is in order, both in working with regional agents and wholesalers as well as testing the services of established foreign sales agencies. Ultimately, nearly half our M.I.T. books should find foreign buyers.

An ultimate comment about paperback editions may anticipate a question. Paperback book publishing is an innovation, not in book production but in book marketing. It is more particularly an innovation in book

(Concluded on page 46)

New Books

THE UNIVERSE, by Otto Struve (M.I.T. Press, \$5), consists of Karl Taylor Compton lectures given at M.I.T. in 1959. The reviewer, Frederick T. Haddock, Jr., '41, is director of the Radio Astronomy Observatory at the University of Michigan.

OTTO STRUVE is a distinguished astronomer descended from a line of distinguished astronomers. He directed the National Radio Astronomy Observatory in Green Bank, W. Va., from 1959 to 1962. He was chairman of the Department of Astronomy at University of California from 1950 to 1959 and the director of Yerkes Observatory from 1932 to 1947. He has been the president of the International Astronomical Union and of the American Astronomical Society.

These lectures are up-to-date, lucid, and interesting. This is not surprising since the author has kept abreast with the world's astronomical literature for many years and has written literally hundreds of scientific and popular articles. These have included regular monthly articles for *Sky and Telescope*.

His popular books and articles are profusely and beautifully illustrated with photographs, tables, and graphs. He is prone to illustrate physical principles and laws by simple numerical calculation using order of magnitude values or estimates. At first confrontation this elementary arithmetic may appear distracting, but it serves especially well in astronomical exposition where one's intuition and terrestrial experience is of little use.

The topics selected for the Compton Lectures are on subjects in which Dr. Struve has special interest: The six chapters are titled: "The Solar System; Its Origin and Evolution," "Stellar Evolution," "Galaxies," "Radio Astronomy," "Binary Stars and Variables," and "Man and the Universe." His chapters on the more classical subjects of astronomy form an excellent review of recent developments in those areas.

The chapter on radio astronomy discusses radio sources, the galactic center, and flare stars. Although to date there have been no reports of the detection of radio outbursts from flare stars, Dr. Struve emphasizes the great potential that could be realized by the detection and study of such radio outbursts, which appear to be at the threshold of present-day techniques. Nearly 30 per cent of the chapter is allocated to this exciting possibility. Dr. Struve does not discuss many aspects of radio astronomy, in particular the planets, which are now attracting much attention in this country. Since these lectures were presented, it should be pointed out, there has been a growing body of evidence and opinion that none of the intense extragalactic radio sources is due to a collision between galaxies. Some other explanation is sorely needed.

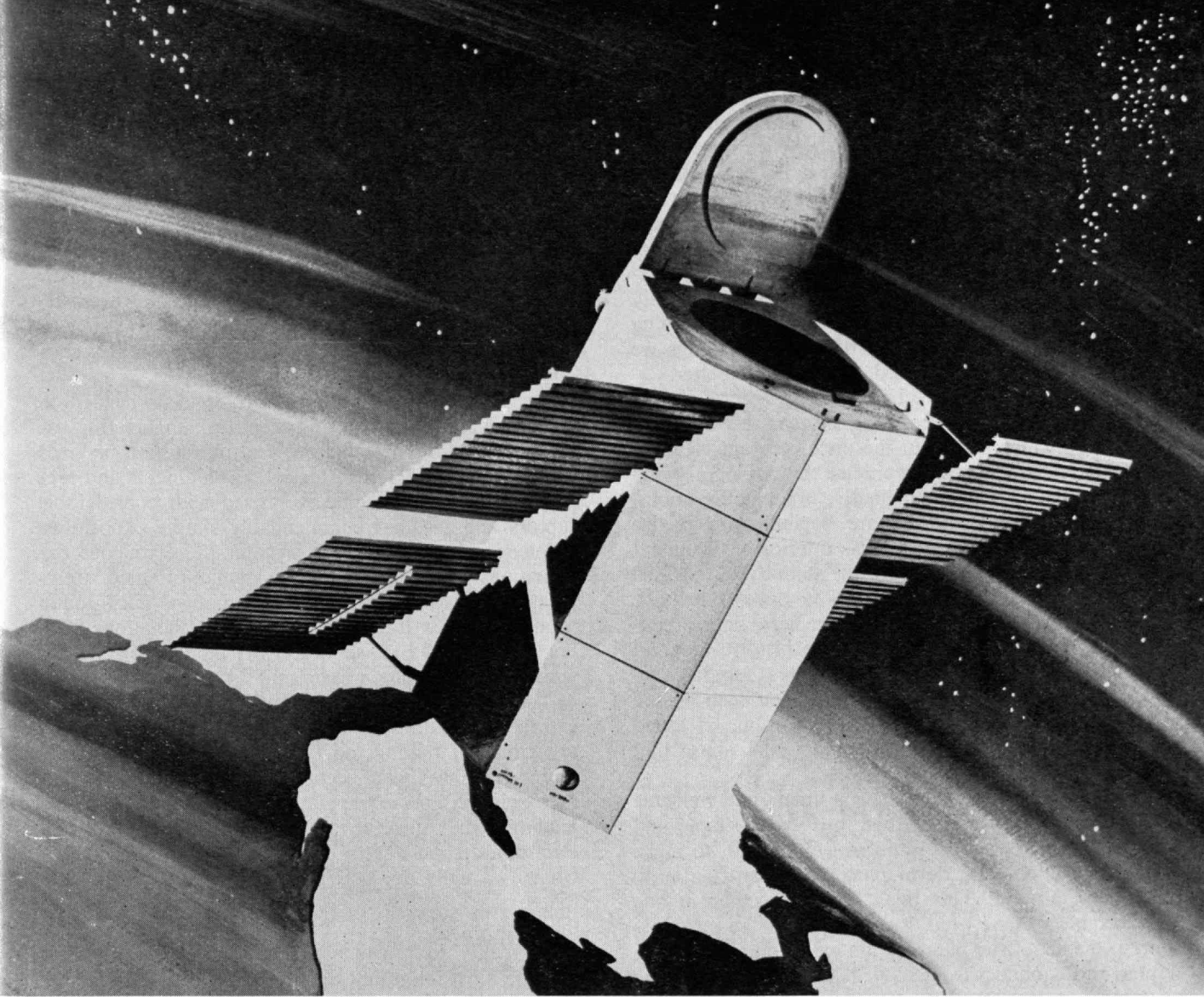
The chapter on "Man and the Universe" discusses the tremendous importance of artificial satellites on astronomy and then briefly traces the historical rela-

tionship between physics and astronomy. Dr. Struve points out that there was an unfortunate separation of astronomy from physics about 300 years ago due to astronomical preoccupation with the practical principles of navigation. Astronomers were also lulled for two centuries by the painstaking accumulation of accurate observations of the position, distances, and motions of the stars, with the result that they became extraordinarily conservative and unreceptive to new and revolutionary ideas concerning the physical universe. In 1952 he collected and edited the opinions of 55 leading astronomers regarding future developments in science and technology. Only one astronomer then mentioned a projectile to the moon and only one advocated revival of interest in the problem of canals on Mars. No one mentioned a space-vehicle telescope or the problem of extraterrestrial life, but nearly all predicted the further breaking down of the barriers between astronomy and the borderline sciences.

Dr. Struve states that the third great revolution in astronomy is occurring now and that this embodies the question, "Are we alone in the universe?" The first astronomical revolution was the Copernican revolution, and the second occurred in the 1920's as a result of research by Shapley and Trumpler which disclosed that the solar system was not at the center of the Milky Way. Dr. Struve states: "Intuitively we all think of mankind as something unique, something that exists only on earth; and that all the wonders of the universe are intended for *our* benefit and enjoyment. But the vast number of stars that must possess planets, the conclusions of many biologists that life is an inherent property of certain types of complicated molecules or aggregates of molecules, and the uniformity throughout the universe of the chemical elements, the light and heat emitted by solar-type stars, the occurrence of water not only on the earth but on Mars and Venus compel us to revise our thinking." He says the probability is great that a few of the many billions of stars in the Milky Way will have some form of life and that, although the probability that any of them will have intelligent life at present is vanishingly small, it is not zero. The attempt to record radio signals deliberately radiated by such intelligent life must be made.

But whether or not we discover artificial radio signals from distant planets, we must face the philosophical implications of the statement, "We are not alone in the universe." We must adjust our thinking to the fact that the free will of intelligent bodies is not something that exists only on the earth.

Dr. Struve closes his lecture with the statement, "Unfortunately, astronomers have not succeeded in adequately explaining to the public the great importance of protecting on a world-wide basis a number of narrow-frequency bands in the radio spectrum for the exploration of the universe." Without such protection the science of radio astronomy may become a dead science. The healthy continuation of radio astronomy requires at least a few protected bands in every octave of the radio spectrum from about one megacycle/sec. to 100,000 megacycles/sec. This is considered an inordinate demand by the guardians of the radio spectrum, but it strikes this reviewer as a small request relative to the present tremendous waste of this unique natural resource by many of the present legal users.



Dr. Struve's book, reviewed on the preceding page, notes the value of satellites to astronomers. The orbiting observatory pictured above is scheduled to be launched in 1963 to

THE GREAT WHITE MANTLE, by David O. Woodbury, '21 (Viking Press, \$4.95), is the latest of many books Mr. Woodbury has written on technical subjects; it is reviewed by John T. Fitch, '52, M.I.T. Science Reporter for WGBH-TV.

JUST 10,000 years ago—a mere hour of geologic time—the land we know in New England was buried under the great white mantle of the Pleistocene ice age. Grandly and powerfully the glacier had spread down from the north, grinding and scratching the earth beneath it. Great Mt. Washington became only an island rising a few hundred feet through the mile-deep ice. The ice was so heavy that the land itself was depressed as much as 900 feet, rising again only when the glacier made its mysterious retreat.

Whether this latest retreat means our ice age is at an end, whether we are in one of its lengthy interglacials, or whether we are just in one of the numberless tem-

porary thaws among the freezes, scientists cannot foretell. They do know that the earth's climate teeters on such a delicate balance that the slightest change in its heat budget can plunge us deep into another epoch of perpetual winter. But the mechanisms that trigger each new glacier and make it melt away are puzzles with a number of hypotheses but no firm answers.

The glacier itself is an awesome drama; man's reconstruction of its growth and decline is a fascinating detective story. Mr. Woodbury has chosen to tell the story by taking us on a fanciful trip through time to observe the changing seasons of the ages. Much of the drama is lost, however, through confusion and repetition in sliding back and forth through time and jumping from one locale to another. It also seems inappropriate to a drama of this majesty to cast it with a boulder named Whitey and a pair of ice balls named Arthur and Albert. This, however, may be a style preferred by *The Reader's Digest* for which Mr. Woodbury often writes.

SITE PLANNING, by Kevin A. Lynch, '47 (M.I.T. Press, \$7.50). The author is associate professor of city planning at the Institute and the reviewer, O. Robert Simha, '57, is the Institute's planning officer.

AS WE LOOK back over the last 15 years, nothing strikes us so much as the vast amount of building done. All over our urban and suburban landscape we have piled, plunked, dropped, and spread roads, houses, schools, office buildings, and industrial plants. We have on the whole been satisfied by our ability to produce these new facilities rapidly, and the challenge implicit in every setting of one brick on another, the challenge of an attractive, inspiring and pleasing environment, has only recently begun to make itself apparent in that annoying feeling that, with a little more thought, the things we have done could have looked and worked better.

Across the nation this feeling is taking concrete form: San Franciscans are threatening to tear down a new expressway which shuts out the once pleasant views of the Embarcadero; home buyers are developing a growing resistance to the unimaginative tract house subdivision; industrial developers are beginning to realize that a pleasant exterior as well as interior environment has important consequences for the stability of a skilled labor force in a competitive market; and an aroused citizenry expresses its concern when new, poorly conceived developments are proposed in historic areas of our older cities, or along our all too few famous avenues. People are asking why the boat has been missed on so many occasions, and where ways can be found to correct, eliminate, and avoid the visual abuse that has been heaped before their eyes.

Kevin Lynch's *Site Planning* is a timely and welcome work that reminds us that there are ways, simple and unpretentious as well as grand and exuberant, to make our constructions and developments pleasant places to be in and around. This book brings together in one comfortable volume what the author calls "an introduction to the art of site planning, an exposition of its principles and a condensed technical reference." In being just what it says it is, it offers to both the interested layman and the practicing professional, a highly useful guide to the proper integration of man-made structures and natural amenities. It deserves wide reading by those facing development decisions, whether it be the siting of a single family house, the creation or the expansion of a complex of industrial or institutional buildings, or the erection of a string of power lines.

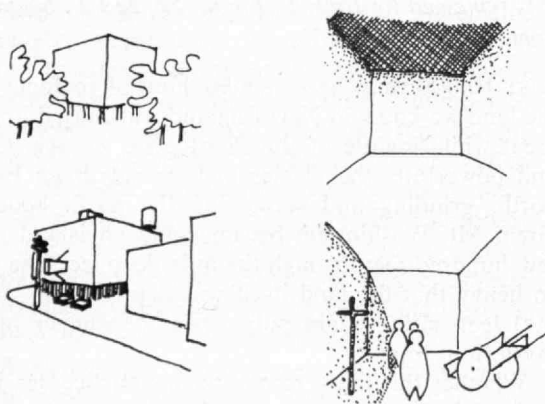
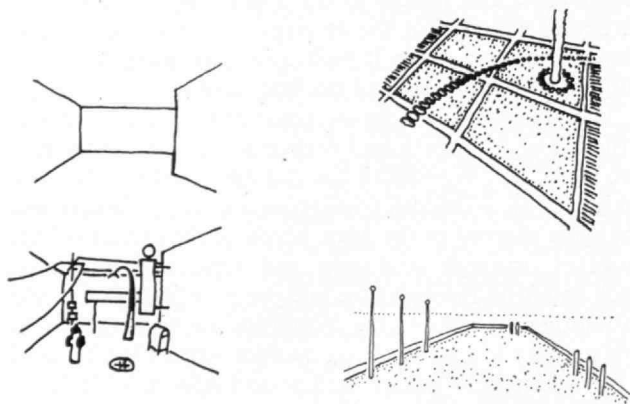
REVOLUTION IN ELECTRICITY, by Martin Mann, '41 (Viking Press, \$5), presents technical information in widely understood ways; the reviewer, Richard D. Thornton, '54, is associate professor of electrical engineering.

THE LAYMAN with an interest in electrical "things" should find both benefit and enjoyment in Mr. Mann's new book. His talent in reducing technical jargon to understandable explanations is here directed to applied quantum theory. He explains the revolution in electrical and electronic engineering which has been made possible by modern physics. His revolution is the revolution of applied quantum physics over applied classical physics; the revolution of the transistor over the vacuum tube, permanent magnets over electro-magnets, thermoelectrics over heat engines, electro-luminescence over light bulbs.

Mr. Mann discusses the important ideas needed to understand the physical and electrical engineering aspects of quantum-oriented devices. In addition he gives interesting accounts of historical developments and predictions. His main theme is carried with considerable success and includes commendably simple expositions of physics and engineering without the erroneous explanations so often found in layman-oriented treatments. A reader with little mathematical background should be able to understand the explanations and, hopefully, should cease to regard modern electronics with the too-prevalent mysticism.

This reviewer's primary criticism is of Mr. Mann's extrapolations to the future. Scientists and engineers are guilty of talking too often in a manner to imply more than has been accomplished, and Mr. Mann's extrapolations on extrapolations could be highly misleading. One must always distinguish between what electronics is *capable* of doing (or even has done) and what it actually does on a practical basis. It does not follow that the laboratory curiosity of the present is the signpost of the future. Few ideas bridge the gap from reality to practicality and it is highly probable that the most important developments for 1975 are not yet anticipated.

But let it be said again, this book is mostly commendable and well written. It contains many interesting pictures and intelligible explanations and *anyone* would benefit from a reading. It is now urgent that the *average* man reach a workable understanding with the simple facts of electronics lest its advance publicity mislead him. This book should help.



Marginal drawings from *Site Planning*, by Kevin A. Lynch, '47.

COLONIAL VESSELS, by William A. Baker, '34 (*Barre Gazette*, Barre, Mass., \$7.50), deals with some Seventeenth Century ship designs. The reviewer, Evers Burtner, '15, is Associate Professor of Naval Architecture and Marine Engineering, Emeritus, M.I.T., and Curator of the Francis Russell Hart Nautical Museum.

THE AUTHOR is not only well versed in the technical design of modern seagoing ships but has spent much time in research on pre-Eighteenth Century vessels. He supervised the design and construction of the *Mayflower II* and the *Gjøa* replica at San Francisco of Amundsen's Northwest Passage vessel.

In his first chapter, on "Naval Architecture," the rig and hull forms of vessels of the period are reviewed. Vital features such as framing and other construction details for both the larger decked ships and the small open boats are dealt with.

There is a section on shallops—"the largest of three types of small craft—that is capable of making coastal voyages." The author reviews the evidence for the sail plan and the form and size of a typical Seventeenth Century shallop. He includes his lines and a sketch of the one recently built for Plimouth Plantation, *Pilgrim Shallop II*, which is on display at Plymouth.

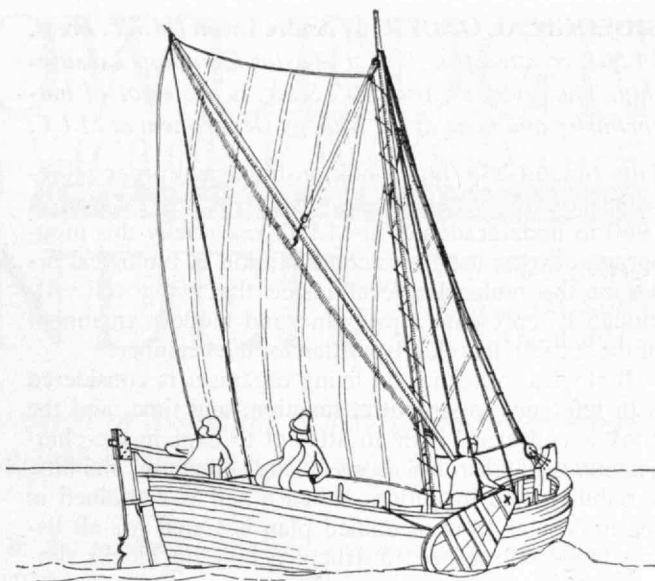
In the chapter discussing pinnaces, the transom stern craft, next larger than the shallop, all available information on this type of craft is studied. He even draws from a recently uncovered ceiling decoration in Lady Anne's Hook House, Tisbury, England. The pinnacle, in some instances, was large and speedy enough to accompany a typical sailing vessel of the period. The author drew the preliminary plans for a model of the pinnacle *Virginia*, built near Bath, Maine, which is considered to be the first vessel constructed in British North America.

Although in modern usage the term "bark" refers to the rig, the early colonists used the word to indicate a single-deck, round-stern vessel, with no superstructure, ranging from 12 to 100 tons (tonnage measurement), roughly 35 to 75 feet overall. These were generally fitted with two square-rigged masts and in the larger sizes carried a small lateen mizzen. Several interesting accidents that befell barks are reported. Also, for those interested and for model makers, complete plans are provided that would enable the model of a 47-foot over-all length bark to be constructed.

After considerable review, colonial period ketches are defined as double-ended decked vessels of finer lines and smaller than the average bark. They were used for fishing and coastwise freighting, i.e., where handiness and speed were of value. Thus, the colonial "ketch" referred to a hull type and was not reserved for the form of rig at present. Possibly, the word "ketch" was developed from the French term *cache*—the deck protected and hid the cargo below.

The inclusion of a glossary of colonial period nautical terms and a summary of the several types of vessels discussed will greatly help the general reader. Extensive supporting references for each chapter document the deductions drawn and would aid in further study.

Mr. Baker has made this most interesting volume even more interesting by including many of his own sketches.



Mayflower's shallop under sail (from "Colonial Vessels").

SO YOU WANT TO BE AN ENGINEER, by Alan E. Nourse and James C. Webbert (*Harper & Brothers*, \$3.50), is one of a series of books offering vocational guidance. Gordon B. Baty, '61, the reviewer, is administrative assistant to the Dean of Engineering at M.I.T.

THIS LITTLE BOOK is to be commended for high school and early college students attempting to plan professional careers. It is an excellent, concise book for the boy who wants to know what an engineer does.

The principal author is a doctor rather than an engineer, but brings to this book a clear idea of what engineering and technology are all about; this, coupled with a medical man's insistence upon the value of rigorous training and of professional pride, gives the book a style and tone which M.I.T. men should approve.

There is an interesting section on the history of the major engineering fields and the ways in which they interrelate in modern society. Specific examples of engineering activities are provided, as well as a good notion of the types of employers that an engineer may expect to have. Emphasis is given throughout to the personal qualities which promote success in engineering; the capacity for logical thought, hard study, and creative imagination as well as dogged determination, courage, and willingness to accept responsibility for one's actions.

Dr. Nourse includes remarks about professionalism and professional registration of engineers, job-hunting and job-changing, and the relative importance of education vs. experience, and of calculation vs. judgment, from which even a graduate engineer might profit.

Some topics, in the reviewer's opinion, could well receive greater or different treatment. The author gives scant attention, for example, to the disappearing boundaries between engineering disciplines, and tends to view the engineer as the custodian of our technology rather than as a dynamic force that is changing our whole society. But perhaps the high school senior should first know what the profession demands.

BIOLOGICAL ORDER, by André Lwoff (M.I.T. Press, \$4.50), resulted from a Karl Taylor Compton Lecture-ship. The reviewer, Irwin W. Sizer, is professor of biochemistry and head of the Biology Department at M.I.T.

THIS DELIGHTFUL little book on biological order represents the series of lectures given by Professor Lwoff in 1960 to undergraduates at M.I.T. Essentially this monograph devotes itself to a consideration of biological order at the molecular level inside the living cell. Although it represents a profound and modern treatment of the subject, it is clearly written for the beginner.

Biological order in the living organism is considered with reference to structure, function, and time, and the book is concerned with an attempt to explain the characteristics of life such as specificity, diversity, stability, variability, and evolution. When a cell is examined at the molecular level, a unified plan is found for all living things with respect to structure, building blocks, sim-



André Lwoff during a seminar in the Compton Lecture Hall.

ilar processes of assimilation, metabolism, and reproduction. The critical components of the living cells are recognized to be the proteins and nucleic acids.

In the chapter on "Hereditary Order," the subject of modern molecular genetics is developed in a masterful way. The key molecule is DNA, made up of four different purine or pyrimidine bases. The special arrangement of any three of these in a triplet along the DNA fiber constitutes a code which relates to the positioning of an individual amino acid along the polypeptide chain of a protein. Hence, 20 different triplet codes furnish the information for the orderly placement of 20 amino acids in the biosynthesis of a protein. The information regarding how to make 2,000 different enzymes in the living cell is stored up in the DNA of the chromosomes. During reproduction each strand of DNA can reproduce itself as well as direct the synthesis of all

proteins and thereby indirectly control everything in the living cell. Mutation, the keystone to evolution, involves a change in one of the triplets of the DNA code whereby one nitrogenous base is substituted for another resulting in the formation of a mutated protein.

Under "Functional Order," Lwoff considers the control of cellular metabolism from the point of view of enzymes, their biosynthesis, activation, and inhibition. Genetic aspects of enzyme control are considered in terms of structural, regulating, operator, and repressor genes and their interaction. In many cases it is found that the synthesis of an enzyme is directly controlled by the product of its activity. Such genetic and environmental regulation constitutes an elegant feed-back mechanism which has evolved over millions of years to specifically take care of the needs of the organism. The living cell is seen as an integrated system of macromolecular structures and functions with ability to metabolize, grow, and reproduce.

Considerable insight into the molecular basis of life has been gleaned from the study of minute viruses made up of only proteins and nucleic acids, which can neither metabolize nor grow, and can only reproduce parasitically inside a living cell. The reproduction of viruses involves the same genetic blueprint for protein synthesis seen in higher organisms. Certain lytic viruses cause infection and death of the whole cell while other temperate lysogenic viruses maintain a benign existence as a prophage attached to the whole chromosome of the host cell. Such lysogenic viruses may modify the ability of the cell to become immune or change the infectivity of the cell to virus attack, or change the virulence of the attacking virus and, finally, transform the host from a quiescent cell to a rapidly multiplying cancer cell. The interacting nucleic acids and protein systems of host cell and infecting virus are hopelessly intertangled. For example, the genes of a virus may be under the control of the regulating mechanism of the host cell, and its genes may in turn be controlled by the virus. Hence, the pathology of a virus-infected cell may be exceedingly complex leading to changes in the host or virus or both.

In the last chapter, Lwoff considers biological order from the point of view of thermodynamics and entropy. The very improbable high degree of order characteristic of life is referred to as negentropy. Biological order is epitomized in the DNA molecule where the secrets of life are stored as a result of an evolutionary process extending over 3×10^9 years.

Soviet Science Information

THE National Science Foundation brought out a new edition this year of *Providing U.S. Scientists with Soviet Science Information*, which was prepared by Boris I. Gorokhoff of the M.I.T. Libraries.

The Gorokhoff report is a guide to the sources, extent, nature, and availability of Soviet scientific literature in the U.S. It notes that the number of scientific journals available in translation rose from about 50 in 1958 to 120 in 1961, and says that, although little data of direct military application appear in these journals, some information is included that would be considered proprietary in this country.

Copies of the report may be obtained free from the Foundation's publications office in Washington.



Professor Victor F. Weisskopf

KNOWLEDGE AND VICTOR F. WEISSKOPF WONDER

THE NATURAL
WORLD AS MAN
KNOWS IT

A new and faster form of evolution is determining man's fate, and he rather than nature is responsible now for what happens

Bookshop Browsing . . .

HERE and beginning on page 21 are excerpts from two new books certain to interest many M.I.T. students and Alumni.

KNOWLEDGE AND WONDER, by Victor F. Weisskopf, M.I.T. Professor of Physics, resulted from a series of lectures that he gave at the Buckingham School. In it he has explained man's place in time and space, and the excerpt which begins in the next column is from the conclusion of the author's account of evolution. The publisher is Doubleday & Company, and the price is \$4.95.

THE POOR ROCKEFELLERS, by John W. Rockefeller, Jr., '20, is the autobiography of a man often mistaken for a rich Rockefeller. The paragraphs from this book starting on page 21 deal with his days as an undergraduate at M.I.T. This volume was published by Vanguard Press, Inc., and the price tag on it is \$4.50.

IT HAPPENS often in the material world that an increase in quantity at a certain point gives rise to deep qualitative changes. Let us look at an example of quality from quantity in a solution of salt in water. If the concentration of salt is below the saturation point, the solution looks clear and no deposit is formed. Actually, the salt molecules hit the walls of their vessels and form very tiny agglomerations, but the deposit is dissolved immediately. If the concentration of the solution is increased beyond the saturation point (e.g., by boiling off some water), the speed of formation of deposit surpasses the speed of redissolution; salt crystals begin to form in most beautiful patterns. It would seem to the onlooker that at this point the solution has acquired a creative ability to give birth to special crystal structures. Actually this is a quantitative relationship, the balance between deposit and dissolution.

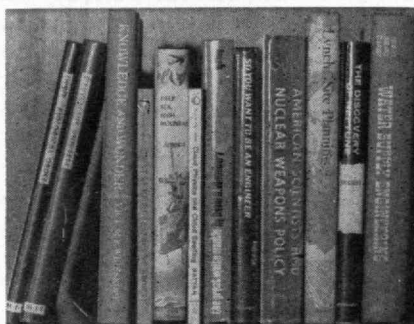
Let us turn now to the evolution of the nervous system in animals. We know that the nervous system enables animals to adapt themselves to their environment with the help of their sense organs and their memory. In fact we know that animals "learn" from experience, and that this learning capacity is an important factor in survival. Yet a large part of animal behavior is based upon "instincts"; it is part of the biological inheritance.

When man evolved from the animal kingdom, something new must have happened. We contend that this new element is based solely upon a quantitative difference in the nervous system. By an increase in this system nature established a new type of evolution which has

broken and will break all rules established in the previous evolutionary periods.

The elements of the new evolution are all present in the animal world: memory and learning and perhaps even the formation of concepts and ideas. Only, as in the salt solution below the saturation point, they are yet too weak to be constructive. The attempts at learning in the animal world are mostly "dissolved" with the death of the individual. When man evolved, the constant increase in the complexity of the brain and the nervous system reached a point at which death of an individual no longer eradicated the gains that memory of experience had established.

Further, the individual became able to use his brain to draw conclusions from his experiences, to reason out consequences of actions without having to perform them. He can think of what would happen under certain conditions and can prepare his actions accordingly. The development of language and memory enabled an adult individual to tell a younger person about his experience and his reasoning, and the pupil could act as if he had had the experience himself, or had carried through the reasoning. The workings of the brain became complex enough to provide for vicarious experience and vicarious reasoning and to enable man to pool the experiences and the thinking of several individuals, and eventually to accumulate experiences and thoughts from generation to generation. This accumulation was made possible by the development of concepts, of mental constructions, of abstract ideas, and of many other



methods of formulation and transmission of thought, such as writing and painting.

The difference between man and animal is analogous to the saturation phenomenon. Once the experiences collected by the species as a whole become more numerous than the experiences lost through the deaths of individuals, a new process begins, the formation of a "tradition."

Inheritance in Words

At this point evolution has overcome the barrier against inheritance of acquired properties. As long as the sum of experience lost by death is greater than, or as great as, the sum transmitted to the next generation, there is no accumulation of experience. The behavior of each generation is essentially the same and is dictated by biologically inherited properties. But if the transmission of experience between generations is large enough to cause an accumulation, the young will learn from the failures and successes of the elders, and newly acquired behavior patterns will be "inherited" not via the nucleic acids, but by word of mouth.

At this point a completely new form of evolution has begun. The behavior pattern changes much more rapidly than the biological changes in the body structure. While the latter changes are bound to the formation of new nucleic acid chains, the changes in the behavior pattern are much faster; they become established when a new way of behavior is found and transmitted by tradition to the following generations. For example, man has changed from a hunting animal to an agricultural one; from a cave dweller to a city builder; he has developed his toolmaking capacity from the carving of pointed

stones to the machine factory. All this development took place in time intervals infinitely shorter than the periods in which biological changes have occurred—in which, as an example, man evolved from apelike animals. The large brain capable of thinking, the formation of concepts, the use of language, and later on of writing, bring about an accumulation of experiences which is no longer lost when an individual dies, but which is developed further with every new generation.

Once the critical number of nerve cells is reached and this stage of development attained, the further course is set and will develop at a constantly accelerating pace. Again the analogue of crystal formation in a saturated solution of salt is relevant. Crystal formation starts best from surfaces of other crystals. The first one formed has no such surface available, so it must take a relatively long time to form the first small crystal. But the next structures are formed at the surfaces of previously formed crystals. The greater the number of crystals formed, the greater are the opportunities for new formation. The same principle applies, then, to the formation of tradition. At the beginning, when mankind first acquired the possibility of developing it, the formation was very slow. Once started, however, it grew with increasing vigor and differentiation.

Science as a Step

Tradition takes forms that are not always favorable to the species. If, however, measures are found which are favorable—as, for example, agriculture, the exploitation of metals, etc.—these measures initiate a new way of life within a few generations, and bring about that sudden change in behavior that is typically human.

Science is just one of these new measures or attitudes which grew from the accumulation of ideas and experiences. It took many generations to disentangle the vast number of observations, to separate apparent connections from real ones, to distinguish superstition from scientific fact. But once a systematic method for recognizing facts was found, the scientific revolution of the last 300 years could get under way. There is no doubt that science constitutes an important step in the

new kind of evolution which began with the formation of tradition.

So far, of course, it is only the pattern of behavior and thinking that is transmitted from one generation to the other. The body structure is still reproduced in the old-fashioned animal way of propagation, and this leaves it unchanged for many generations. But who can tell? Nobody can exclude positively the possibility of a development like that portended in Aldous Huxley's *Brave New World*. It may become possible to change at will the nucleic acids which determine the development of the species. . . .

If We Blunder . . .

Even without having attained this ambitious aim, the new evolution has left its mark on the planet and interferes everywhere, in an ever-increasing way, with the mechanism of the previous type of evolution. Man creates new races of animals by crossbreeding and purposeful selection. The natural evolution of the animal world will never again proceed in the old way. When a new development in nature is discovered by man, it is channeled into some special direction. The times are over in which nature alone developed its own forms, slowly, by trial and error, undisturbed over many generations. No longer do we rely upon chance to produce mutations and new forms and ways of life, with man as a happy onlooker. We now take it upon ourselves to develop nature and our own species.

This is an arduous task, full of pitfalls and responsibilities. We assumed this burden only a short time ago, and nobody should be astonished if we blunder now and then. After all, nature blundered in the previous evolution, when mammoths and dinosaurs acquired larger and longer dimensions until they were given up as dismal failures. We must proceed by trial and error, just as nature did. The pace of the new evolution by tradition, however, is infinitely faster than that of the old evolution by inheritance. Mistakes are punished immediately and cause tremendous suffering to the perpetrators and their offspring. We are responsible ourselves for what happens, and we cannot blame nature for it.

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The storehouses of experience.



THE POOR ROCKEFELLERS

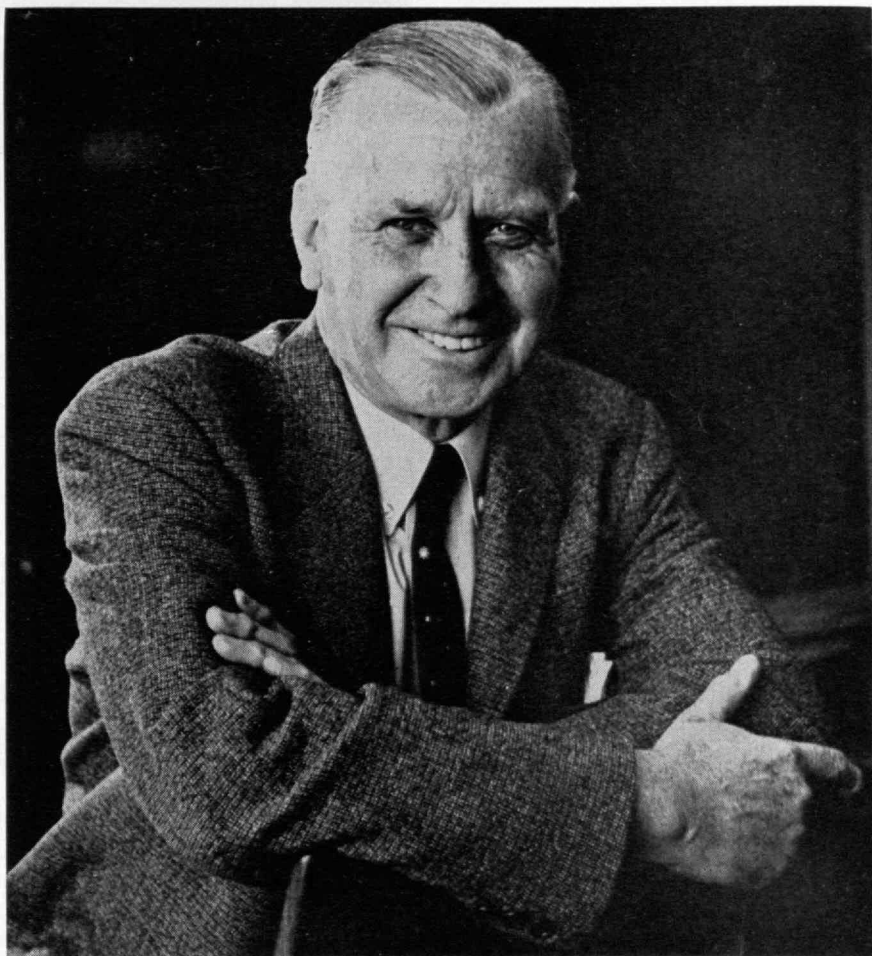
Recollections Rare and Debonair
By JOHN W. ROCKEFELLER, JR.

EDDIE FARROW, my fellow high school debater, and I disembarked from the Eastern Steamship Line's night boat at Boston's India Wharf early one morning to start our four years at M.I.T. Were I to say Tech welcomed us, I should be guilty of an unconscionable falsehood. Tech didn't welcome its incoming classes then—it challenged them. The sprawling heap of masonry on the opposite shore of the Charles River Basin was ominous enough from a distance. It became no less so as the entering freshman approached more closely.

We lined up to register in a queue that appeared to be endless and to move with glacial velocity. It led us through one of the drafting rooms, where, on the large blackboard running the length of the front wall, someone had printed in large, neat, even letters the first message from the school to our entering class: "Don't lean on the drafting tables. If you're not man enough to stand on your feet, you're not man enough to stay in Tech."

Farrow and I had been invited to the Sigma Chi fraternity house in Brookline for dinner that evening and there we learned from other flesh-and-blood humans something of the attitude of her sons toward the Spartan mother who was the Massachusetts Institute of Technology. Her sons didn't spend four years cherishing the Spartan Lady; they spent them fighting her.

We were impressed and somewhat disappointed, but not frightened. If these perfectly healthy and normal young men who surrounded us could manage to survive, so could we. We would grapple with this gigantic stone octopus leering at us



The toy gun-toter is now the author pictured above. Browsers in his book, "The Poor Rockefellers," will find accounts in it of how he was mistaken for a wealthy Rockefeller, and reminiscences of M.I.T., including those reprinted here.

from across the river and make it yield our degrees.

We were the first freshmen to start in the new buildings in Cambridge, and that year's senior class was one of three to receive Harvard degrees in addition to their S.B. from Tech—a pity, since today one never knows when a Harvard degree may come in handy.

A benefactor named McKay had left a bequest to that oldest of American colleges, one of the provisions of which stipulated the awarding of degrees in certain branches of engineering. Tech was giving all the required courses. What could be simpler than for Harvard to award degrees to admittedly well-qualified Tech graduates and keep the mon-

cy? A few years later the Supreme Judicial Court of Massachusetts terminated this cozy arrangement on the ground that it involved unlawful use of the bequest's monies. But it was good fun while it lasted.

The Stage Doorman's Idea

Shortly after our arrival, when Ed and I had pledged Sigma Chi and were having dinner in the fraternity house one evening, the phone rang. Answering was one of the duties of a pledge and Eddie got to it first. He turned to me. "Here, it's for you. Your friend wants to know whether this is the Sigma Cheese fraternity." I took the receiver. It was Joe Cawthorne, the actor and our neighbor in Deal, N.J. *Sybil* had just opened in Boston and Joe wanted to know if I would like to come down to the Colonial Theater on Boylston Street with a friend and watch the show from the first entrance.

The musical, which had had a successful run on Broadway the previous season, starred Julia Sanderson, Donald Brian, and Joseph Cawthorne. This combination, through its success in Jerome Kern's tuneful *Girl from Utah*, had surpassed in fame the Cubs' double-play trio of Tinker, Evers, and Chance and was threatening to become the threesome best known outside of purely liturgical areas in the entire United States. Ed and I went down, and the doorman, having been previously instructed, let us in. He scrutinized me carefully, apparently decided that rich people didn't look very different from others, and told us how to get to Cawthorne's dressing room. He saw me a great many times thereafter. Judging from a snatch of conversation I overheard, he had decided that old John D. had put money into the show and, instead of exercising his prerogative of naming one of the female principals—an act wholly incompatible with his widely advertised respectability—had elected to have his grandson, no doubt a student at Harvard, make frequent visits backstage to count the house, an act more in keeping with his equally well-publicized business acumen. The man with me was in all probability a C.P.A.

Julia Sanderson had been a visitor at our house in Deal, and when she stopped on one of her exits to



Author Rockefeller as a student.

say hello, I introduced Farrow to her. Just about as lovely as anything you might meet anywhere on either side of the proscenium, she had a trick of standing close to you that made you look down at her and her look up to you, so that you felt as though you would like to protect her, even though you were only a 17-year-old freshman.

By the time the show left for Chicago, I could have understudied any part of it. I knew the score word perfect—not only the hit numbers like Cawthorne's "I Can Dance with Everybody but my Wife," but even the "Letter Song"—I think Sanderson and I were the only two persons in the United States who knew that one.

The Hopkinson Bequest

Shortly after the Boston close of *Sybil*, another event of extracurricular interest took place. Though the McKay bequest had run dry, another, much smaller and shorter-lived, was just starting—the mysterious Hopkinson bequest of 1917.

It was natural that the Shawmut Bank, situated in the cultural center of the country, should carry a large number of student checking accounts and just as inevitable that some should experience the slight shock and embarrassment of occasional overdraft. If a minimum balance was required, it was something in the neighborhood of eight dollars, and overdrafts were as likely as not to be the results of ten-dollar checks carelessly issued in settling poker-game accounts. Hopkinson didn't play poker and his overdraft was not

ten dollars—it was nearer a thousand.

While Hoppy and the bank officials examined the culprit checks and agreed that the signature bore not the slightest resemblance to his handwriting and that the sad state of his balance was none of his doing, large gasoline tanks and crated pumps were arriving at the Institute from the Bowser Tank Co. of Albany, N.Y. There they remained cluttering up the yard because no one knew who had ordered them, who wanted them, or where to put them. Other consignments arrived, less massively impressive, to be sure, but equally mysterious. These included a shipment of books from the Puritan Publishing Company, containing two dozen copies of *Robinson Crusoe for Little Folks*, a flagrant insult to the literary tastes of even a student body admittedly more interested in science than in the arts.

Eventually the mystery unraveled. In every case the donor, a sneak thief, had, when purchasing his gift, made out a check for a few dollars more than the amount of the bill, accepting the small difference in cash. He had used not only Hoppy's check book, taken from the pocket of his overcoat hanging in the cloakroom of Quantitative Lab, but also Hoppy's name. Sympathetic to the cause of education in general and M.I.T. in particular, he had thus expended funds not his own on gifts not wanted, always holding back a little for himself.

Boston After the War

If you returned after the war to any one of a number of liberal arts colleges, you stayed with your class by getting credit for the time you had spent in service: two years at college and two years in the army and you had your B.A. Tech was different. You got kissed on both cheeks by a French general and [received] a *Croix de guerre* for being a hero; you got credit for a course at the Institute by taking it and passing an examination. You got it that way whether you were a draft dodger or Black Jack Pershing himself.

When I returned to Tech early in 1919, the business about not being able to stand on your own two feet that had greeted us as freshmen had been washed off the blackboard for good. Freshmen as well as returning

upperclassmen were coming in wheelchairs or on canes or crutches. But Tech was still tough.

If you couldn't be in New York, New Orleans, or San Francisco, Boston wasn't a bad fourth choice. The Boston Symphony Orchestra during the 1919-1920 season seemed to be doing all right without Karl Muck, its enemy-alien conductor, and most of the world's finest artists were scheduled for appearances at Symphony Hall. Among them was Ernestine Schumann-Heink.

Madame Schumann-Heink was, as just about everyone knew, a great artist. She was, as perhaps relatively few knew, infinitely more—a great person. Her son had been a student at Tech and a member of the chapter some time before any of us in the house had ever thought about becoming engineers, and when we learned of her scheduled appearance at Symphony Hall we wrote her asking her to dine with us before the Sunday recital. When we received her acceptance note, we were delighted, but our joy was mixed with some apprehension, for we had never entertained anyone quite so famous and were far from sure we knew how to go about it. We shouldn't have worried. She entertained us.

From the moment she entered the house she swept us all into that expansive heart of hers without even seeming to try. There was no studied charm—simply a selfless nature interested in everything and everyone. She started by apologizing for not being Fritzi Scheff, whom she apparently considered every undergraduate's pin-up girl but whose stage career in point of fact had started in 1903 and reached its peak, stopping the show nightly with Herbert's "Kiss Me Again," in *Mlle. Modiste* in 1906.

She told us about her son who had won the sword at Culver Military Academy for the best in horsemanship. ". . . And then what did he do? He joined the Navy!" She told us about another son, August, and this time her tone was more somber, for it was he whose widow and family she had just brought home from Germany. August had held a reserve commission in the German navy and in 1915 had answered the call to the colors. He departed on his first mission with a



The late Professor "Tubby" Rogers.

fleet of 84 submarines. Only four ever came back. He was the one who had made a few people forget that his mother had three sons in the American forces and caused them to protest her appearance at our army camps during the war—the one who, being farthest removed in distance and patriotic loyalties, must have been deepest in her great heart. I think she confessed this sorrow because we were about the age August was when she had last seen him alive, before they were separated by an ocean, a great conflict, and finally death itself. She finished, downed the last sip of her coffee, and hurried off to her recital at Symphony Hall.

Tubby Rogers' Course

As for Tech itself, it was a fact known internationally that the Massachusetts Institute of Technology turned out engineers who knew their business and a fallacy known at least nationally that "if you cut one of them in half, it would take an hour before he started to bleed." During my last two years there, between the fall of 1919 and June, 1921, I learned something about this "school without a soul" and some of the men who molded the characters of its bloodless breed of graduates; Tubby Rogers, for instance, the speaker at commencement time who attracted nationwide attention but received no honorary degree.

M.I.T. is one of the few institutions that has managed to preserve a state of virginal purity concerning the honorary degree, which,

if it cannot always be swapped for an endowment, is attractive bait to lure a commencement speaker possessing some news value. In the midst of platitudinous utterances of honorary-degree seekers, in 1929, Tubby Rogers, a professor of English at M.I.T., came as a breath of fresh air. He made an honest speech: "If you really want to get to the top fast, marry the boss's daughter."

The plan was hardly original with him, for Tech men had been following this course long before he mentioned it, and in a few cases had selected the bosses, whose daughters they married, with a rare sense of business acumen.

As a junior, I had enrolled in Tubby's Contemporary English Literature course, along with other technical students, many of whom had considered the successful negotiation of the Sixth Reader the maximum literary attainment necessary for a rewarding career in engineering. His class was an experience few of us will ever forget, for he was an inspired and inspiring teacher. A stout man with stout-lensed glasses, he would squint through them at his audience, narrowing his eyes until they were mere slits. It was as if by decreasing the apertures, he sought to increase the force by which he transmitted his wisdom and love of language to his listeners. The young engineers listened to his words as they would have listened to a Beethoven symphony, with soul and spirit, and most, in the wonder of the happy discovery that they possessed soul and spirit, ate them up.

The wisest of preceptors, Tubby knew full well that it is beyond the assumed omniscience of the educator to determine accurately who should and who should not receive an education. His experience had taught him that the top 10 per cent of a high school graduating class may make no greater contribution to society than will the bottom 10 per cent, and is just as likely to include a Teach, Blackbeard, or Kidd.

The Bowery Mission type of professor, he believed that books, like God, are good for everyone. He never asked whether those who comprised his classes were qualified to get the most out of his course. He hoped only that all would get

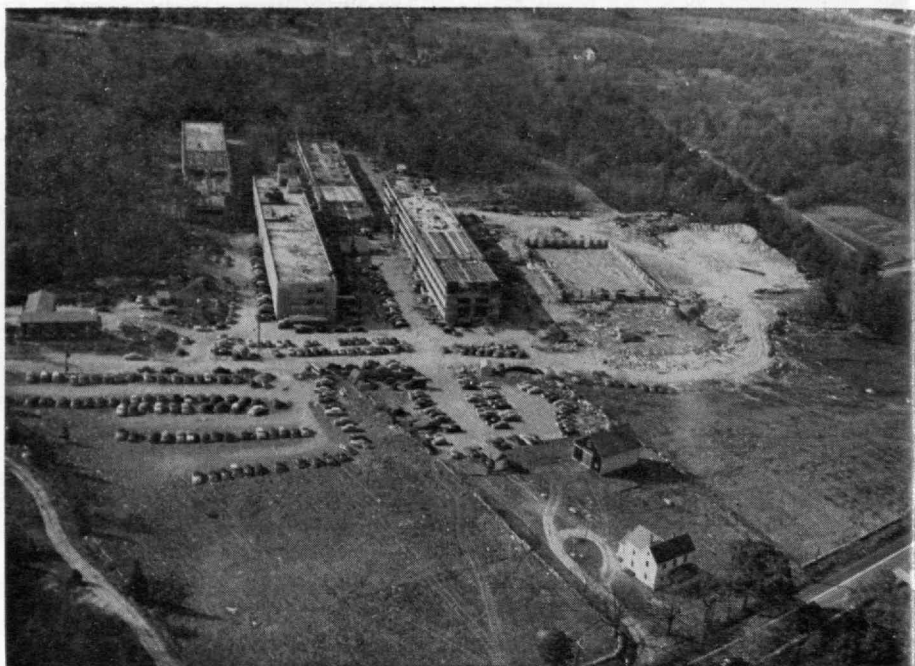
(Concluded on page 32)

The Growth Of Lincoln

MEN who watched the construction of M.I.T.'s Lincoln Laboratory in Lexington, Mass., might no longer recognize it. The large structure in the foreground of the photograph below was first occupied this year.

The white radome on the third building from the left is the type designed for the DEW line and now also used in non-arctic regions to withstand typhoons.

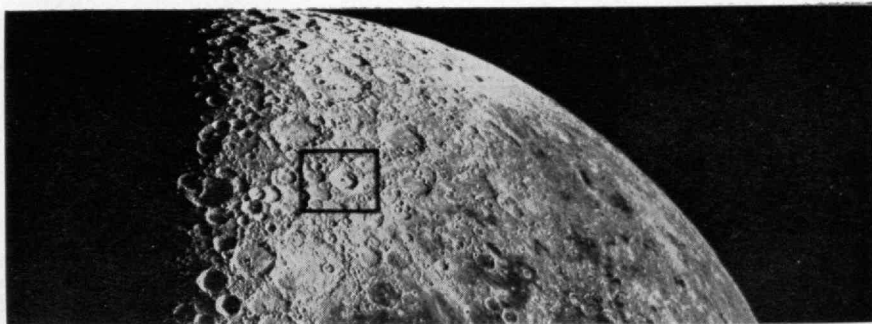
The dish supported by a pedestal on the second building from the right is a precision paraboloid built to study deep-space communication via millimeter waves; a quad-helix antenna at the far end of this building is the sort used for tracking and telemetry in Project Mercury.



The white house in the lower right-hand corner looked the same in October, 1952, when the photo above was taken, as it does in the large recent photo below.



Trend Of Affairs



Optical Maser Progress

SELDOM has such a small chip of matter aroused as great interest among well-informed people as the gallium arsenide junction diode which was developed early this year at Lincoln Laboratory. As a source of *incoherent* radiation, this single-crystal diode's capabilities quickly suggested the possibility of developing new kinds of infrared communication systems—for such purposes as preventing aircraft collisions and keeping in touch with an astronaut during his re-entry into the earth's atmosphere.* Now, independently but almost simultaneously, Lincoln and other laboratories have succeeded in making gallium arsenide diodes that can generate *coherent* light. Reports suggest that this new development may bring about a multitude of practical uses for optical masers (often referred to as lasers) much more quickly than seemed likely heretofore.

Optical masers have generally required a "pump," that is, a source of input power that will stimulate a crystal to emit radiation that is coherent and nearly monochromatic. Until now, it has been necessary to pump the crystal with radiant energy at optical frequencies, a rather inefficient process. In the gallium arsenide laser, the output radiation is generated directly by a DC electric current input to a tiny crystal diode. This is not only much simpler than optical pumping, but vastly more efficient: so efficient, in fact, that under proper conditions a photon of light is generated for nearly every electron that crosses the diode junction. Finally, and perhaps most important of all, the laser diode's output can be modulated easily and efficiently, over a very wide band-width, by simply modulating the electrical current input, using conventional and highly developed radio circuit techniques, and thus eliminating a problem that has hitherto been a major obstacle to the use of optical masers for communications.

Impressive feats (e.g., bouncing a light off a moon) already have been performed with optical masers. Efforts to put them to practical uses in industry and space have been thwarted in many instances, however, by the complexity and inefficiency of the masers previously available, and by the difficulty of modulating their outputs for communication purposes. The new semiconductor laser shows promise of removing these obstacles.

Gone, however, with the obstacles is the dramatic ap-

pearance that has become associated with the laser: gone are the long ruby rods and dazzling flash tubes, the eerie glows and mysterious shapes. The gallium arsenide optical maser diodes, in their present form, are just tiny blocks of crystal about one millimeter on a side, with two fine wires attached.

Solar Wind Research

DOES the solar wind compress the earth's magnetic field on the sunny side of our planet? M.I.T. scientists will seek an answer to this and other questions with equipment they are preparing for the national space administration's first "streetcar" satellite.

This satellite—called a streetcar because it will carry many different scientific experiments—will be launched in 1963 from Cape Canaveral by an Atlas-Agena rocket. It will be put, if possible, into an elliptical orbit with an apogee of 69,000 miles and a perigee of 170 miles. Scientific equipment aboard it for 19 experiments will weigh about 150 pounds. Of this, 10 pounds will be devoted to the solar wind experiment prepared by the M.I.T. Laboratory for Nuclear Science and Lincoln Laboratory.

The "wind" to be investigated consists of streams of electrically charged particles. These streams make up interplanetary plasma—a great cloud of magnetized, electrically neutral, ionized gas that is emitted from the sun. This satellite's highly elliptical orbit is expected to make it useful for study of interactions between the solar wind and the earth's magnetic field. It has been suggested that the solar winds may press the earth's magnetic field downward over the surface of the earth facing toward the sun. If this sunny side compression occurs, the streetcar satellite should be able to detect it since the apogee point, over a period of a year, will move from sunlight to darkness and back several times.

Lunar Radar Progress

THE CRATER TYCHO on the moon (enclosed by the rectangle on the Mt. Wilson Observatory photo above) is only about 55 miles wide. It has been identified, nevertheless, as the source of strong radar echoes received by Lincoln Laboratory's Millstone Hill station. This pinpointing of the source of radar returns from a heavenly body was achieved by a mapping technique in which a digital computer was an integral part of the radar system employed.

*See Technology Review, November, 1962, page 26.

Who Goes Where and When?

HAVING routed 3,540 undergraduates and 3,135 graduate students into 149 classrooms for lessons in 700 different subjects this fall, the M.I.T. Registrar's Office is now about to reconsider the whole problem. Its staff is using an electronic computer to simulate the consequences of different distributions. Thus Registrar Robert E. Hewes, '43, and his aides hope to determine whether either the Institute's space or its students' time—and that of their 2,200 instructors—can be used any more effectively in the future.

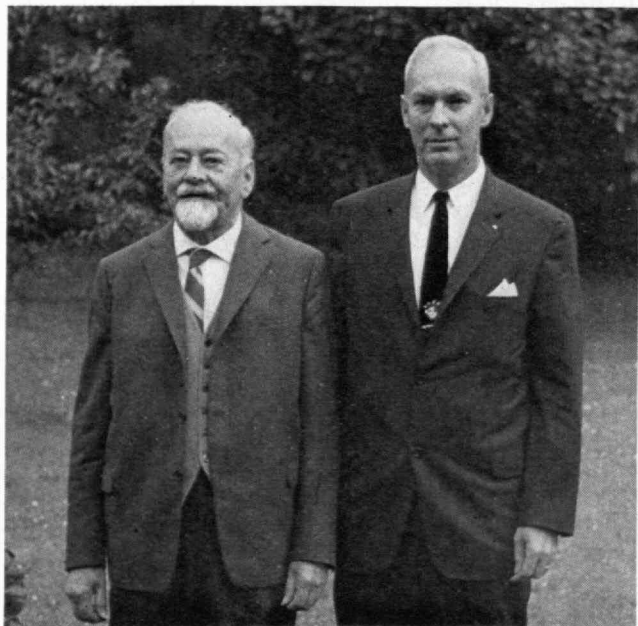
Parceling out 109,000 square feet of space for lectures, recitations and seminars, and 50,000 square feet for undergraduate laboratory work, is a complex task. Undergraduates and graduates sit side by side in many classes nowadays. First-year students are divided into 35 sections, and so many members of these sections have advanced placement in one or more other subjects that several times 35 different programs have to be worked out for them. Even more variations are likely to be needed next term than this term; last spring, freshmen were enrolled in classes in 125 different subjects in addition to the 16 regular freshman electives.

A computer does much of the strictly clerical work of the Registrar's Office now, but no actual scheduling of people's days is entrusted to it yet.

Organ Music at the Institute

E. POWER BIGGS, who gave the inaugural recital on the new organ at the Lincoln Center for the Performing Arts in New York, will be heard in the Kresge Auditorium at M.I.T. at 8:30 P.M. on December 5. He will be assisted on this occasion by Joseph Silverstein and Louis Speyer of the Boston Symphony Orchestra.

Subsequent organ recitals this season in the Kresge Auditorium will include one by André Marchal, the blind organist at Saint-Eustache in Paris, on March 6; and another by Michael Schneider of the Hochschule für Musik in Berlin, on April 10. Single tickets are \$1.50 and may be obtained by writing to the Box Office, Room 61-026, Kresge Auditorium, at M.I.T.



Professors Schuler and Wrigley in Gottingen last summer.



LEAD SHEETS were placed over the Kresge Auditorium dome this fall to halt the wrinkling and cracking which has occurred since the building was finished in 1955. The new squares can be repaired individually if necessary.

The Theoretical Grandfather

A FAMILIAR NAME in the M.I.T. Instrumentation Laboratory is that of Professor Maximilian Schuler of Göttingen University in West Germany. His theoretical work has been drawn on there to develop inertial guidance systems for ships, submarines, aircraft, missiles and space vehicles. Few of the men responsible for these applications of the theory, however, ever have met Professor Doctor Schuler.

This year, Professor Walter Wrigley, '34, was in Europe to present a paper before the International Union of Theoretical and Applied Mechanics. Professor Wrigley has been closely associated in the Instrumentation Laboratory for many years with "the father of inertial guidance," Professor Charles S. Draper, '26, and went to Göttingen before returning to M.I.T. to meet and pay his respects also to the "grandfather" of much of the laboratory's work.

Professor Schuler's work early in this century made the gyrocompass practical. His discovery of the 84-minute characteristic of a pendulum on the earth's surface led to the more recent development of a fully inertial system of guidance. The "Schuler period" of an object such as the earth is determined by its gravitational strength and its radius, and will not be the same on the moon or on another planet as it is here on earth. The M.I.T. Instrumentation Laboratory is now applying Professor Schuler's ideas to problems of navigation in realms that seemed unattainable when those ideas were first advanced; and Professor Wrigley found Professor Schuler, who is now retired, intensely interested in the developments that have ensued from his studies.

Phosphates vs. Tooth Decay

They have reduced dental caries in experimental animals, and researchers now are studying their addition to people's diets

BY JUAN M. NAVIA, '50

PHOSPHATES have been found in the last decade to be so potentially important in the control of dental caries that several laboratories are now investigating them. What is the relationship between phosphates and dental decay? By what mechanisms can phosphates significantly prevent dental decay in hamsters and rats?

Can phosphates be as effective in preventing caries in human beings as in experimental animals? And if so, should cereals from which milling has removed phosphorus be enriched with phosphates?

A hundred foreign and American scientists who have investigated such questions met at M.I.T. last October 5 and 6. Dean George R. Harrison and Professor Nevin S. Scrimshaw welcomed them, and Rear Admiral L. D. Coates spoke for the U.S. Office of Naval Research, which joined with M.I.T. to sponsor this meeting.

Largely as an outgrowth of research which its chairman, Professor Robert S. Harris, '28, and others have conducted at M.I.T., the Department of Nutrition, Food Science and Technology is planning

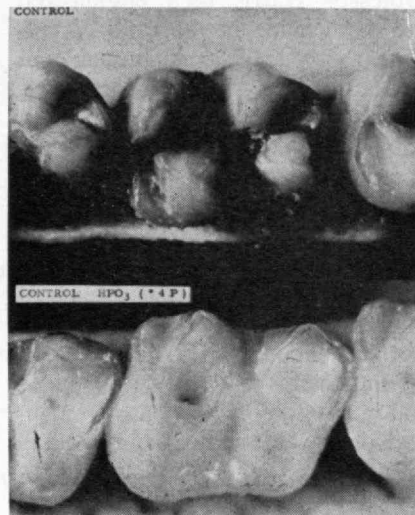
a basic science program for dentists and others interested in oral science. This conference was a demonstration of the complexities of such biological research.

The Problem's Setting

First, the human tooth and its environment were examined. Then the chemical, pharmacological, and other aspects of the use of phosphates were considered.

Dr. Ronald J. Gibbons of the Forsyth Dental Infirmary in Boston took up the bacteriology of dental caries. In contrast to most other tissues which are sterile and free of micro-organisms, the mouth is warm and moist with saliva which contains an abundant supply of nutrients from food residues. Thus the mouth provides an ideal environment for the growth of millions of micro-organisms. Some strains of these bacteria are etiological agents in the production of dental decay. The acid produced as a by-product in the metabolism of these bacteria causes destruction of the tooth substance.

Dr. Robert C. Likins of the National Institute of Dental Research



Decay in hamster's teeth is shown above; teeth of hamster fed metaphosphoric acid are shown below.

at Bethesda described the chemistry of the tooth's normal enamel and dentine, and Dr. William G. Armstrong of the Eastman Dental Hospital in London then discussed the chemistry of carious or decayed enamel and dentine.

At the next session the chemistry of phosphates was reviewed by Dr. John R. van Wazer of the Monsanto



Professor Robert S. Harris, '28 (left) and Dr. Robert C. Likins of National Institute of Dental Research in Kresge lobby.

Chemical Company, the biochemistry and pharmacology of phosphates was dealt with by Dr. Bernard J. Katchman of the Miami Valley Hospital in Dayton, and the effect of parathyroid hormones in the metabolism of phosphates was discussed by Dr. Frederic C. Bartter of the National Heart Institute at Bethesda.

The Work at M.I.T.

Professor Harris then emphasized the significance of the ratio of calcium to phosphorus in human and animal diets. For many years nutritionists have been aware that an imbalance between minerals, or between minerals and phosphorus, interferes with animals' absorption of certain nutritionally essential minerals. If future research shows that increased ingestion of phosphorus is truly effective in the control of dental caries in man, it will be important to know what kinds and amounts of phosphorus compounds can be used without producing adverse physiological effects. Will the phosphorus added to men's diets disturb the Ca/P ratio, and interfere with their utilization of minerals as it has in animals? Extensive work on this subject has been done at M.I.T. under Professor Harris' direction.

His group has studied the effectiveness of different phosphates in preventing caries under varying conditions in experimental animals, and also has produced evidence that an increase in the phosphate content of human diets might not only protect a person against the development of dental decay but also retard the formation of stones in the soft tissues of the body.



Dr. Alan Stralfors (left) reported results of an experimental change in Swedish children's diets; Dr. W. G. Armstrong discussed the chemistry of dental caries.

Abraham E. Nizel, '51, an M.I.T. research associate, reviewed the effects of phosphates fed to hamsters and rats, and pointed out that significant caries prevention by phosphates has been observed in six different research centers, including M.I.T. In almost 100 experiments with animals, an inverse relationship has been found between the level of phosphate in the diet and the amount of dental caries which develop. This significant result has been obtained, despite marked differences in diets, animal species, animal strains, experimental design, and laboratory conditions.

Work With People

A similar result was obtained in at least one experiment with human beings. Dr. Alan Stralfors of The Royal School of Dentistry in Umea, Sweden, reported how this experiment was carried out with several thousand nine-year-old children in the third grade of 13 different schools in Malmo. These children were fed a school lunch in which the bread, flour, and sugar had been fortified with dibasic calcium phosphate at a 2 per cent level. The incisor teeth were carefully examined with x-rays at the beginning of the study and at intervals during the two-year experiment. Fifty per cent fewer caries developed in the children fed phosphate in the school lunch during the first year, and approximately a 40 per cent reduction was noted during the second year, thus indicating that it was significantly effective.

A similar study in South Dakota was reported by Dr. Olaf Mickelsen of the National Institute of Arthritis and Metabolic Diseases and Dr.



Irwin Ship of the National Institute of Dental Research. The results of this study were not as striking, possibly because all teeth, rather than the incisors only, were studied. Still there was some indication of a cariostatic action in humans.

Dr. Basil G. Bibby of the Eastman Dental Clinic in Rochester also carried out experiments, both in Brazil and in upper New York State, but he obtained no clear-cut evidence of a reduction of cavities by the use of phosphates.

The final session of the conference was devoted to discussions of the possible mechanisms by which the phosphates might exert their protective action. The mechanism might be local, systemic, or a localized result of systemic action. Dr. Finn Brudevold of the Forsyth Dental Infirmary discussed the effect of feeding supplementary phosphate on the tooth surface. In his estimation the prevailing evidence points to a local mechanism, and if this is the case, the effectiveness depends largely on the period of time the phosphate is retained in solution in the mouth. He suggested that studies should be conducted to compare one of the highly soluble orthophosphates with one of the insoluble complex phosphates, incorporating them in the food in a way which will favor maximal local action for extended periods.

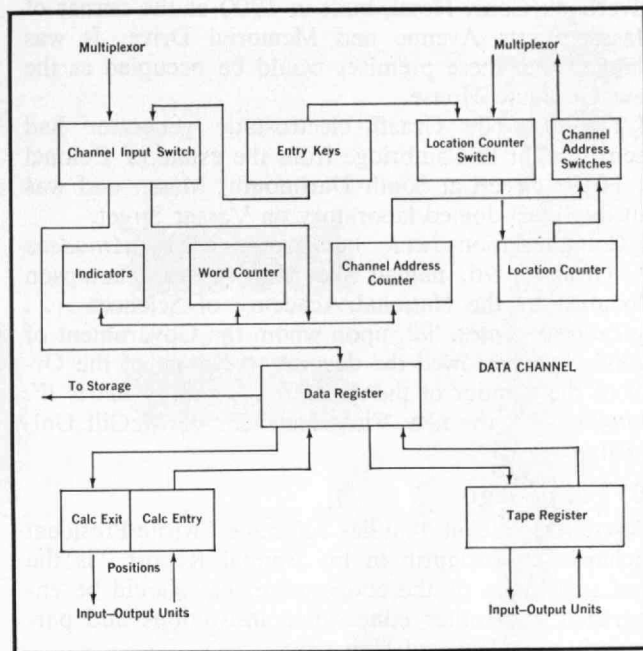
Dr. Albert E. Sobel of the Jewish Hospital of Brooklyn also discussed the possible mechanism of phosphates in preventing caries. He indicated that phosphate added to the diet may reduce susceptibility to dental decay by (1) increasing the ratio of phosphate to calcium in the tooth, and decreasing the solubility of its enamel, (2) acting as a buffer to neutralize acids produced by mouth bacteria, (3) changing the metabolic end-products and rate of growth and reproduction of the bacteria, and (4) affecting the composition of the secreted saliva, thereby affecting the tooth structure.

These subjects were placed under the magnifying glass of the inquiring minds of several outstanding scientists. As is the case in many similar conferences, more questions were raised than were answered, but the meeting served to clarify areas of knowledge and ignorance and to indicate areas where future research might be fruitful.

IBM asks basic questions in machine organization

How efficiently can we use computers?

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L1B	0	0	0	0	0	0	0	0	0
COL	81	0	0	0	0	0	0	0	0
NUMBER OF ON-LINE INPUT RECORDS							89		
NUMBER OF OFF-LINE PRINT RECORDS							0		
NUMBER OF SYMBOLS, DEF							4,DEFOP	0,UNDEF	0



This type of written input-output program is relatively time-consuming and costly to prepare, particularly when input-output routines are used repeatedly.

Input of routine data with a unit such as this IBM 7090 data channel reduces program writing, speeds up processing, and cuts the cost per answer.

In an effort to increase efficiency, more and more instructions have been built into computers in the form of circuitry. This means fewer written programs are necessary. However, built-in computer instructions that facilitate the solution of a particular type of problem may limit the computer's capacity to handle a variety of problems. Because of this, IBM is studying new ways of organizing data processing systems. The goal is to improve the speed and proficiency of specialized problem solving without sacrificing the flexibility of general-purpose machines.

Computer architects at IBM are attempting to achieve the most efficient relationship of built-in instructions and programming systems to the range of problems to be solved. They are transferring many input-output and programming operations to built-in circuitry. One example is the IBM 7090 data channel shown above. In addition, they are developing common languages which make it possible to use the same program on different machines. At the same time, they are working to increase over-all speed by

developing time-sharing and concurrency techniques that make greater use of the entire system. For example, IBM programmers have developed a method by which a large computer can handle a number of problems at once, thus reducing the cost per answer. This involves a supervisory program that monitors the execution of the multiple tasks assigned to the central processor. In addition to these multiple problem-solving techniques, an experimental system permits the computer to handle several different programs simultaneously. From developments such as these will come the advanced architectural techniques necessary for a new generation of computers. If you have been searching for an opportunity to make important contributions in machine organization, optics, solid-state physics, or any of the other fields in which IBM scientists and engineers are finding answers to basic questions, please contact us. IBM is an Equal Opportunity Employer. Write to: Manager of Professional Employment, IBM Corporation, Dept. 6152, 590 Madison Ave., N. Y. 22, N. Y.

Institute Yesteryears

Edited by H. E. Lobdell, '17

25 Years Ago

IN THE REVIEW it was reported that "the urgent need for additional dormitory space [would] be met to a large degree" through the Institute's purchase of the Riverbank Court Hotel, built in 1900 at the corner of Massachusetts Avenue and Memorial Drive. It was planned that these premises would be occupied as the new Graduate House.

¶ The Van de Graaff electrostatic generator had been brought to Cambridge from the estate of Colonel E. H. R. Green at South Dartmouth, Mass., and was put in a steel-domed laboratory on Vassar Street.

¶ Congratulations were being received by *Amadeus W. Grabau*, '96, named the Mary Clark Thompson Medallist by the National Academy of Sciences . . . by *Louis S. Cates*, '02, upon whom the Government of Bolivia had bestowed the decoration Knight of the Order of the Condor of the Andes . . . and by *Lewis W. Douglas*, '17, the new Vice-chancellor of McGill University.

50 Years Ago

"ANOTHER problem that lies before us," wrote President Richard C. Maclaurin in his Annual Report, "is the kind and limits of the coöperation that should be encouraged with other educational institutions and particularly with Harvard University. . . .

"How far in this direction is it expedient to go? Fortunately this is a question that it should be possible to consider calmly and to discuss patiently, now that there can be no doubt . . . in the minds of any of us that Technology is strong enough to enter safely into alliances or to stand absolutely alone. . . .

"Unfortunately, the phrase 'duplication of effort' has often been misapplied. . . . There is no regrettable duplication where different men or machines are employed in two institutions, even although they do exactly similar work, provided that they are employed to *their full capacity*. Unfortunately, in a properly equipped school of applied science, a great deal of costly machinery must be installed that is used only occasionally, and, especially in the higher branches only by a small number of students. The duplication of such machinery in neighboring institutions imposes a heavy financial burden on the community . . .

"More serious than any duplication of machines is the loss that falls upon the community by excluding advanced students of each institution from the benefit of coming under the influence of the pioneers of science in the other institution, men whose character and attainments make any suggestion of 'duplication' absurd.

"I have already referred to the distinction of Professor Waldemar Lindgren, who now occupies the William Barton Rogers Professorship of Geology. Harvard is not likely to attempt the impossible task of 'duplicating' such a man, but it would be a great advantage to the advanced students of that university if they could come within the range of his influence as a teacher."

75 Years Ago

"THE 13th Annual Meeting and Dinner of the Alumni Association was held at Young's Hotel, Boston, on December 30, 1887, 61 persons being present." President Howard A. Carson, '69, presided, and Professor George F. Swain, '77, as Secretary reported the Association's balance on hand to be \$60.65; and that the amount of the Alumni Fund was \$1,248.36. Francis H. Williams, '73, was elected as the fourth President; David A. Lyle, '84, as Vice-president; and Frederick W. Clark, '80, as the third Secretary.

¶ The absence of any Christmas vacation is something "which has been much commented upon by Tech students," observed the editor of *The Tech*. "Still, the majority are in favor of letting things go on as they have been," he continued, "as is well shown by the recent action of the Senior Class.

"It was given them to understand that if the members of the class, as a body, would petition the Faculty for a Christmas vacation, that it would be granted, the lost time to be made up at the expense of the vacation week following the Semies, and at the end of the year.

"At a meeting of the class, it was voted not to petition for this, but to let well enough alone. As it is now, the last term of the Institute ends in May, at least a month earlier than at any other college, and this is an advantage which we do not wish to resign.

"The hard work of our course here could not be carried on advantageously in the warm days of June."

100 Years Ago

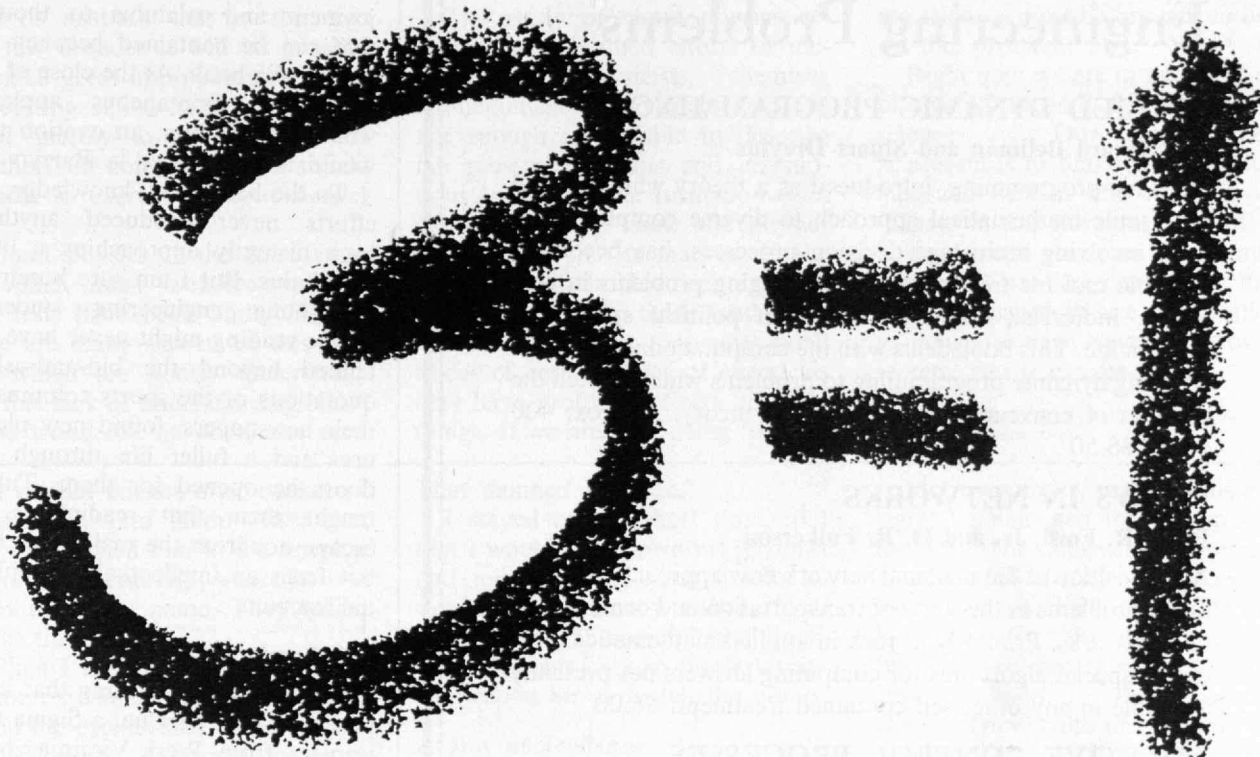
AT THE sixth meeting of the "Government" of the Institute, held December 5, 1862, Treasurer Charles H. Dalton "submitted his First Semi-Annual Report" stating that he had "received in two semi-annual payments, the sum of \$180, being one year's interest on the bequest of Miss Townsend. This amount is on deposit at the Revere Bank. The Treasurer has paid out no monies."*

On December 15, at the seventh meeting of the "Government," there took place a lengthy discussion of the Institute's finances and the Committee on Finance was "requested to prepare and report, as soon as may be, a plan for raising funds for the prosecution of the objects of the Institute."

The Secretary, Dr. Thomas H. Webb, "observed that he presumed it was the intention of the Government to establish a Library for the Institute, not of a miscellaneous but of a special, distinctive character; embracing among other Works, Treatises on Science applied to the Arts, Scientific and Arts Journals, Patent Office Reports, those of our own country and of Foreign Nations. These will constitute an essential Apparatus to aid the Institute in making researches, of a description that its several Committees of Arts will, not infrequently, be required to engage in.

"As the mere nucleus for such a Library, he presented the United States Patent Office Reports for 1855, three volumes, for 1859, one volume, for 1860, one volume, and the Smithsonian Institution Reports for 1855 and 1856. He trusted that other gentlemen would follow the example."

*The legacy of \$3,000 by the will of the late Miss Sarah Townsend of Boston was "the first substantial pecuniary encouragement extended to the Institute."



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The Poor Rockefeller

(Concluded from page 23)

something, and that this something might someday be good for them, and possibly others.

They sat, tailor fashion, on the floor or draped themselves on the radiators and they learned from Tubby as they would not have learned from another the pure enjoyment and stimulus to thought that can be contained between the covers of a book. At the close of the lecture a spontaneous applause would reward him, an ovation that would have gratified a Barrymore.

To the best of my knowledge, his efforts never produced anything even distantly approaching a literary genius. But I am sure hundreds of young engineering students, whose reading might never have extended beyond the bid-and-asked quotations or the sports columns of their newspapers, found new pleasures and a fuller life through the doors he opened for them. Tubby taught them that reading is an escape not from the realities of life, but from an intellectual and spiritual vacuum.

A Laboratory Accident

The most important thing that happened to Jack McCue, a Sigma Chi transfer from West Virginia, happened the day he decided in Chem lab to clean out a test tube with aquaregia, a mixture of hydrochloric and nitric acids so named because it is one of the few solvents that will dissolve the royal metals platinum and gold. What it will do to the cornea of the human eyeball is something Jack found out when a violent reaction sent the stuff splashing into both his eyes.

At West Virginia, he had been a lineman who had gone up to Princeton with a team boasting an all-American fullback named Rodgers to give the New Jersey boys a 25-0 lesson in playing football. The team didn't seem to have any goal kickers but it didn't matter. I am not even sure that down there in the West Virginia mountains they have any goal posts. But if Princeton backs hadn't given Jack any trouble, aquaregia in the eyes was a somewhat different matter.

The fellow at the bench next to his had thrown the 200-pound lineman on the floor, held his lids open, doused his eyes with eyewash, and

Cloud Physics: A Great Advance Just Starting

SCIENCE STUDY SERIES *paperbacks now include* *Cloud Physics and Cloud Seeding*, by *Louis J. Battan* (*Doubleday Anchor*, 95 cents). *Some of its author's views follow:*

LET US ASSUME that in the next few decades it will be possible to make great improvements in our forecasting skills. . . . Are we satisfied merely to coexist with the weather? Of course not! We should be able to exert some control over it. . . .

Cloud physics is the foundation on which most weather-modification tests have been built. Clearly, there are many aspects of this subject which are poorly understood. But this lack of understanding is not to be wondered at when one con-

siders the magnitude of the problems and the fact that it has been only in the last 15 years or so that they have been getting very much attention. . . .

The study of cloud physics requires the combined efforts of meteorologists, physicists, chemists, mathematicians, and engineers. It is not enough to be able to describe the pressure patterns and air motions leading to the formation of a cloud. We must know the physics involved in the formation of the nuclei, cloud droplets, ice crystals, hailstones, electric fields, and other aspects. We know that very small traces of certain types of chemicals may have profound effects on these things. If we are ever going to learn

the details of the clouds and their composition, it is necessary to be able to make reliable measurements in and around the clouds. The latest developments of our engineering sciences must be brought to bear on this problem. . . .

Right now we are in an age of explosive advances in the atmospheric sciences. . . . Our greatest need at present is to find and train young men and women who want to participate in this adventure. It will be a hard road because the atmosphere will not stand still. You have to be prepared to use imagination, to conceive new ways to learn its secrets. But it can be done. . . .

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then poured beaker after beaker of clean water into them. After that they had rushed him to the hospital down on Beacon Hill, where he had given them my name. They called me at the house.

When I reached the hospital, the doctor explained the situation and raised the eyelids so I could see the burned cornea. A burned cornea in a young and otherwise healthy man is a distressing sight—a sudden sentence to a life of Stygian blackness, a life of sound, touch, smell, and taste only, an existence in which the sight of pretty girls becomes all too soon merely a memory. Such an accident doesn't arouse your pity so much as it makes you mad as hell. It could have been avoided. Like many large, powerful men, Jack spoke seldom, and then in an unbelievably soft voice. Talking with the doctors, nurses, and me, he appeared to be the most composed and the least disturbed by his tragic situation. I walked to the window and looked out over the esplanade and the Charles River Basin. Then, to fortify my own rather than the injured man's faith in the future, I spoke to him. "You're lucky. You've got the best doctors in Massachusetts. In no time at all those bandages will be off your eyes and you'll be standing here where I am now. And do you know the first sight you're going to see when you look out this window?

That damned Institute."

I stayed only a short time, told him I would send down his pajamas and toilet articles, assured him he would have as many visitors from the house as the hospital would permit, and went back to the fraternity on Beacon Street to tell the others.

A Day of Jubilation

Then came the tug of war between the doctors and eternal darkness. Jack's condition furnished a meal-time topic that dwarfed to proper insignificance everything else going on at the Institute, in the nation, or in the world.

The day we learned that Jack might possibly regain his sight, might even be able to read once more, was, I am sure, the most jubilant ever known at the fraternity house at 532 Beacon Street.

Once the doctors had established a beachhead against disaster, the reinforcements moved in. The wives of Jack's class instructors faithfully came to the hospital, read him the daily assignments, explained everything from organic chemistry to United States history, and did so well as to make me wonder whether they should not have been lecturing the classes and their husbands home cleaning and cooking. If certain M.I.T. instructors went home to disheveled living rooms and dinners right out of a can, none of them ever complained.

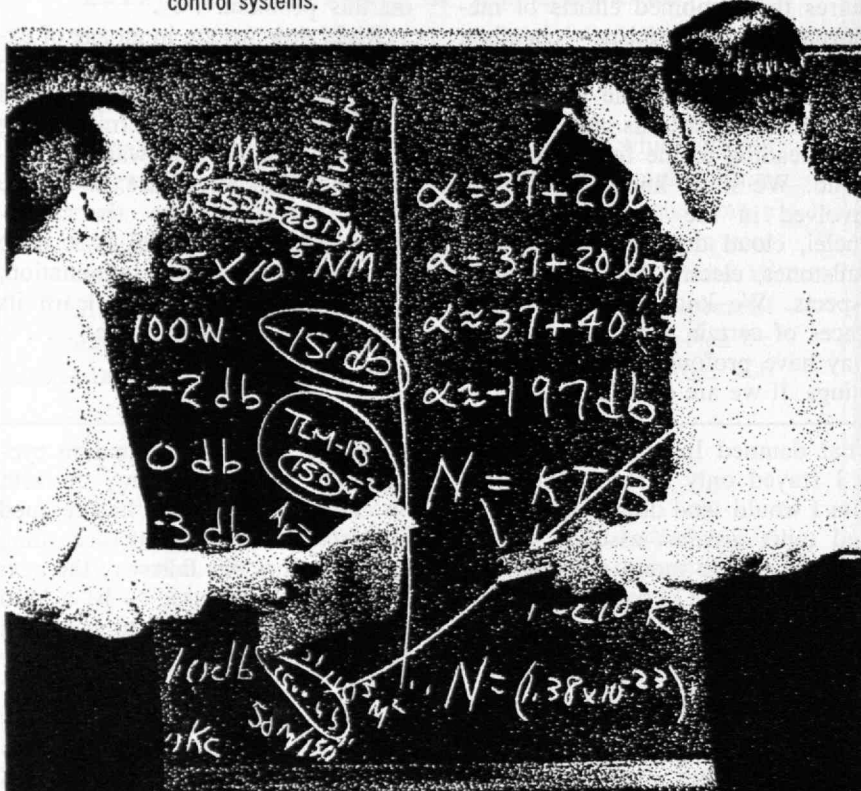
McCue not only regained his eyesight; he managed to stay up with his class. The man who had rescued him from blindness, was, according to the doctors, the fellow at the next lab bench. He refused to be a hero but did have something to say when Jack returned to the laboratory class: "They make those things out of glass"—the test tubes—"so you can see through the sides of them. Why the hell did you have to look down the top?" I doubt that Jack McCue has ever looked into the top of even a glass of Scotch and soda since.

Changes have taken place at the Massachusetts Institute of Technology. Lush grass grows in place of the crushed gray stone in the Great Court. Elms border the paths connecting the buildings and make it less cold and foreboding to the entering freshman than it was the day Farrow and I arrived from the small high school in Asbury Park. These, however, are superficial differences. That which elfishly makes a mockery of the buildings' austerity is the recollection of the wives of the instructors who let their housekeeping go haywire and their husbands eat cold suppers while they brought Jack McCue through with his class; and the rotund squinting English professor who said, "Marry the boss's daughter."

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Individuals Noteworthy

(Continued from page 6)

New Posts for Alumni

NAMED in the news of promotions, elections, and appointments recently were:

Julius A. Stratton, '23, as a Trustee, Pacific Science Center Foundation... *Norman L. Weiss*, '23, *Karl L. Fetters*, '40, and *William J. Harris, Jr.*, '48, respectively, as Vice-president, President-elect, and a Director, American Institute of Mining, Metallurgical, and Petroleum Engineers;

Nathan Cohn, '27, as President, the Instrument Society of America... *Howard L. Richardson*, '31, as Vice-president, General Dynamics Corporation... *Edwin S. Worden, Jr.*, '31, as President and a Director, Edgar Steiner & Company, Inc.;

Samuel G. Nordlinger, '32, as Scientific Representative of the U.S. Atomic Energy Commission, American Embassy, London... *Robert L. Strong*, '32, as Vice-president, Johnson & Higgins... *Arthur C. Ruge*, '33, as a Director and Chairman of the Board, MKS Instruments, Inc.;

Wilfred D. J. MacDonnell, '34, as Vice-president, Kelsey-Hayes, Inc... *Hoyt P. Steele*, '34, as Vice-president, General Electric Company... *Richard F. Morton*, '36, as Associate Dean of Faculty, Worcester Polytechnic Institute;

William B. Burnet, '37, as Vice-president, Engineering, Strong-Scott Manufacturing Company... *Alfred E. Busch*, '37, and *George J. Schwartz*, '42, as Directors, Laboratory for Electronics, Inc.;

Robert J. Davis, '40, as Operations Manager, International Division, Hooker Chemical Corporation... *Norman C. Michels*, '41, as First Vice-president, Association of Iron and Steel Engineers... *Donald D. Scarff*, '41, as General Manager, Lamp Division, General Electric Company, Nela Park, Cleveland;

James K. Tyson, '41, as Chief of Air and Undersea Warfare Section, Operations Evaluation Group... *Allyn W. Kimball, Jr.*, '43, and *Vernon W. Hughes*, '44, as Trustees, Associated Universities, Inc.;

Walter A. Netsch, Jr., '43, as Trustee, Rhode Island School of
(Concluded on page 36)



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Individuals Noteworthy

(Concluded from page 34)

Design . . . Robert S. Reebie, '43, as Assistant Vice-president, Market-Planning and Research, New York Central Railroad . . . Herbert F. Knape, '44, as a Director and Vice-president, Engineering, Knape and Vogt Manufacturing Company, Grand Rapids;

Walter R. Gerich, '50, as Vice-president, Maryland Shipbuilding and Drydock Company . . . Joseph M. Williams, '56, as Research and Development Director, Bunting Brass and Bronze Company . . . Frederick A. Roessle, '60, as Assistant Vice-president, the Singer Manufacturing Company.

Honors to Alumni

RECIPIENTS of recent awards and similar distinctions have included:

Robert S. Mulliken, '17, and William A. Zisman, '27, respectively, the Peter Debye Award in Physical Chemistry, and the 1963 Kendall Company Award in Colloid Chemistry, by the American Chemical Society . . . Winchester G.

Blake, '23, as a Fellow of the American Society of Mechanical Engineers;

Samuel H. du Pont, '24, an honorary Litt.D. degree by the University of Delaware . . . John Stack, '28, the Wright Brothers Memorial Trophy by the National Aeronautic Association . . . Stanley D. Stookey, '40, the 1962 John Price Wetherill Medal by the Franklin Institute.

Honors to Faculty

RECIPIENTS of recent awards among the Faculty have included:

Manson Benedict, '32, the American Chemical Society Award in Industrial and Engineering Chemistry for his work on isotope separation and nuclear technology . . . C. Stark Draper, '26, an honorary lifetime membership in the Instrument Society of America . . . David N. Hume, the 1963 Fisher Award in Analytical Chemistry by the American Chemical Society . . . Provost Charles H. Townes and Associate Professor Ali Javan, Stuart Ballantine Medals from the Franklin Institute for their work on masers.

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New Books

(Continued from page 18)

ON THE THEORY OF SOCIAL CHANGE: How Economic Growth Begins, by Everett E. Hagen (Dorsey Press, \$10). The author is professor of economics at M.I.T. and the reviewer, William T. Struble, is editor of the Institute's Reports on Research.

WHEN tensions arise in a society, they cause changes in the behavior in the home of some of the individuals or groups affected. Subsequently, Professor Hagen suggests, such changes alter the personalities of the children. In his new book he considers the relationship between these changes and economic growth.

Explanations based on economics alone are not sufficient to show why technological progress begins earlier in one nation than in another, according to the author.

A traditional, agricultural society is the kind of society in which economic growth is likely to begin. Yet, the rigid, authoritarian social structure of such a society generally prevents the development of the creative, inquisitive personalities—persons interested in problem-solving—that are the generators of technological progress. In a traditional society, the governing elite thinks of tools and machinery as repugnant.

Change begins when a lesser elite loses status, and tensions grow, Professor Hagen suggests. Estranged from traditional values, this group over a period of years produces creative, driving, rebellious individuals who in the modern world are likely to seek economic power.

(Book News is continued on page 38)

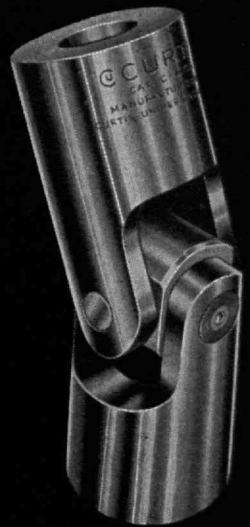
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TITLE	AUTHOR	JOURNAL MEETING
Excitation of Fluorescence in CAWO ₃ by the Recombination Radiation in GaAs	Dr. R. Newman	Applied Physics Letters, Volume I.
Metallurgical Application of the Electron Microprobe	Dr. K. Carroll	Symposium on "Electron Probe Microanalysis", Institute of Metals, Westminster, London, March, 1962.
Adiabatic Electron Fluid in the Presence of Strong Space Charge Forces	Dr. P. L. Auer	Physics of Fluids, September 1962.
Affine m-Ary Gray Codes	Dr. M. Cohn	International Symposium on the Theory of Relay Systems and Finite Automata, Sept.-Oct. 1962 in Moscow, USSR.
A Class of Boolean Equations	Dr. W. Semon	International Symposium on the Theory of Relay Systems and Finite Automata, Sept.-Oct. 1962 in Moscow, USSR.
Stability of Finitely Extended and Inflated Elastic Tube	Dr. A. Corneliussen	Zeitschrift fur Angewandte Mathematik und Physik, May 1962.

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New Books

(Continued from page 37)

THE DISCOVERY OF NEPTUNE, by **E. Morton Grosser**, '53 (Harvard University Press, \$4.95) is a short, lively book which **Frederic L. Holmes**, '54, Assistant Professor of the History of Science at M.I.T., reviews:

THE DISCOVERY of the planet Neptune in 1846 was a scientific landmark not only because of its intrinsic importance, but because it dramatically demonstrated the predictive power of Newtonian mechanics. In an excellent book about the activity leading to this discovery and the reaction to it, Morton Grosser has successfully captured the complex interplay of scientific and extra-scientific considerations which stimulated and hindered this achievement.

After a quick survey of astronomy prior to 1781, Grosser focuses attention on the discovery of Uranus in that year. This created the problem that eventually was solved by the discovery of Neptune. From the time that William Herschel first spotted Uranus accidentally during the course of another investigation, that planet was a source of trouble to astronomers, for despite persistent efforts they were unable to calculate an orbit for it which would satisfy all of its observed positions. Whenever a reasonable fit was obtained, later observations would differ from the predictions based on the theoretical orbit. After struggling with this problem for decades, some astronomers finally began to favor the hypothesis that an unseen planet beyond Uranus caused perturbations of the orbit of Uranus.

In 1842 a young English mathematician, John C. Adams, began calculating the orbit and mass of a planet necessary to produce these effects. Three years later an astronomer of the Ecole Polytechnique in Paris, Urbain Leverrier, independently undertook a similar calculation. Both men had great difficulty persuading astronomers to look for the planet whose presence they predicted. Astronomers at the Cambridge Observatory finally began a halfhearted attempt to verify Adams' hypothesis in 1846. Leverrier turned in desperation from the recalcitrant French astronomers to enlist the aid of Johann Gottfried Galle at the Berlin Observatory—and Galle quickly found Neptune very near to the predicted location.

In recounting this fascinating story, Grosser clearly defines the astronomical problems, but does not discuss the technicalities of their solutions. This is a wise omission, for such discussions would be either superficial or so involved as to detract from his main purpose: to show the interaction of scientific, psychological, political, and nationalistic considerations, as well as the accidents, which determined the course of the discovery. The book reveals both the complexity of these factors and the impossibility of reducing them to any general formula for the procedure of discovery.

An appealing feature of the book is its balance. The details regarding each topic are proportional to its relevance to the central event. Consequently the narrative scarcely ever becomes bogged down in side issues, and leads with steadily mounting tension to the climactic discovery.

(Book News is continued on page 40)



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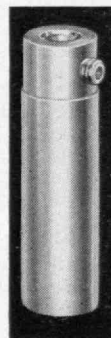
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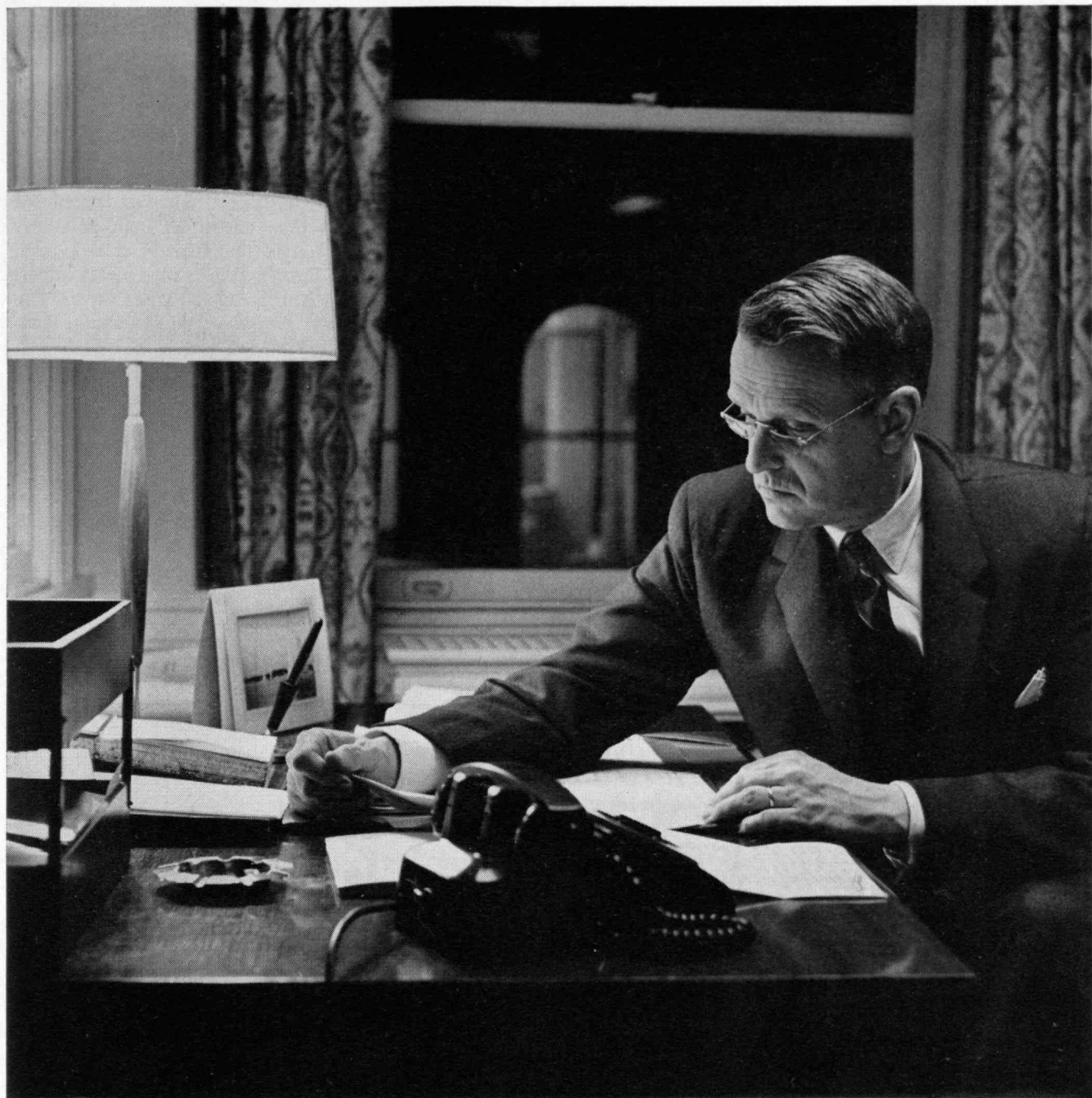
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New Books

(Continued from page 38)

THE SCIENTIFIC LIFE, by Theodore Berland (Coward, McCann, \$5.75), is a book of biographical sketches of American scientists; reviewed here by William Speer, Associate Dean for Student Counseling.

THE READER who is himself a specialist in any of the fields in which Theodore Berland attempts to portray "the scientific life" will no doubt feel that brevity leads to superficiality. The general reader, however, will appreciate the author's major intention, and his ability, to convey directly and vividly a sense of being in the presence of the nine leading scientists to whom this book is an introduction. Mr. Berland portrays them at work, as they are when at home, and when discussing subjects such as religion or politics in which their competence is closer to the reader's level.

One of them is Charles H. Townes, now entering his second year as Provost at M.I.T., and Mr. Berland's chapter about him begins, "If you met quiet Charlie Townes for the first time, without an introduction, you might think he was a church deacon. . . . In fact, he was once a deacon." The author then rapidly takes the reader through Dr. Townes's ancestry, education, and marriage, his invention of the maser, and his years at Bell Labs, Columbia, and the Institute for Defense Analyses.

Mr. Berland's role is that of a host who has arranged a series of meetings for you with his subjects. There is not the confusion which would occur if all

nine were to arrive simultaneously for a cocktail party, but there is a bit of a breathless quality about these meetings. Like a good host, the author lets his guests get acquainted as best they can in the time available, and does not draw attention to himself, even when he interrupts to introduce the reader to the next of his distinguished guests. You cannot help but recognize, as Mr. Berland intends you should, that a scientist is on the whole no more withdrawn from the current of daily human concerns than any other man of ability and energy who has sought to master a chosen field.

In addition to Dr. Townes, the reader meets Albert Sabin, Willard Libby, Murray Gell-Mann, James Van Allen, Chester Southam, Jeremiah Stamler, Philip Hauer, and Dean Wooldridge.

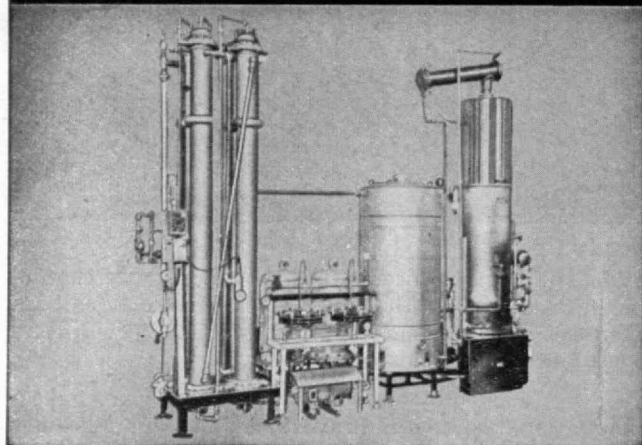
Books for Boys That Dad Will Enjoy

Count Rumford: Physicist Extraordinary, by Sanborn C. Brown, '44 (Doubleday Anchor, 95 cents), is an engrossing addition to the Science Study Series for high school students by a member of M.I.T.'s Faculty. In recounting the strange career of Benjamin Thompson, its author drives home the idea that "physics is not divorced from the morals of society."

Deep Sea, High Mountain, by Elliott B. Roberts, '21 (Atlantic-Little Brown, \$3.75), describes the adventures and achievements of the men in the Coast and Geodetic Survey, for which its author is now Assistant Director for Research and Development. Projects from the Arctic to the tropics are used to illustrate the Survey's work.

(Book News is continued on page 42)

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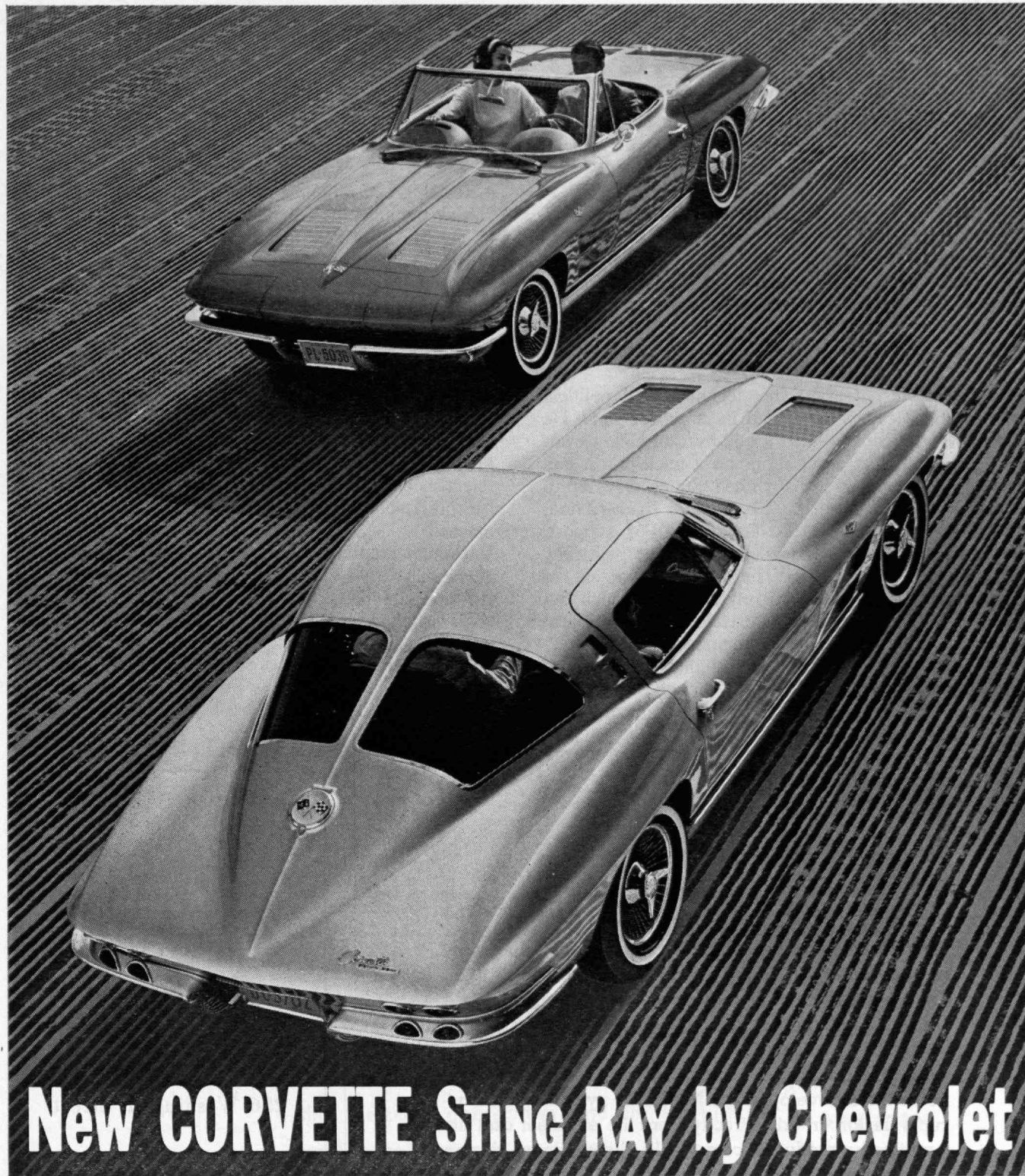
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New Books

(Continued from page 40)

AMERICAN SCIENTISTS AND NUCLEAR WEAPONS POLICY, by **Robert Gilpin** (Princeton University Press, \$6.95), grew out of research for a doctoral dissertation. It is described here by reviewer Stanley Klein, '58, staff member of the Engineers Joint Council.

THIS BOOK scrutinizes the role of American scientists in the formulation of nuclear weapons policy, among whom there have been many M.I.T. personalities. Two of the first were President Karl T. Compton and Vannevar Bush, '16. More recently, as presidential science advisers, important roles have been played by James R. Killian, Jr., '26, and Professor Jerome B. Wiesner.

Gilpin refutes the view that technical and political considerations can be separated in affairs of state. He impressively documents this thesis by thoroughly evaluating the technical negotiations on a nuclear test ban held in Geneva where the United States was represented by James B. Fisk, '31, Robert Bacher, and, until his withdrawal, E. O. Lawrence. For support, Gilpin quotes Fisk who was chairman of the politically inexperienced delegation: "The technical content of arms control negotiations is likely to be very high but experience . . . has shown that technical and political arguments cannot be separated completely or for long."

The author also assails the belief that scientists approach political issues with a unique objectivity and dispassionate state of mind. To demonstrate this con-

tention, the book analyzes at length and with insight the intrascientific conflict over nuclear weapons policy.

Gilpin divides the scientists into three disparate camps. One is the "control school" whose most renowned adherent is Linus Pauling.

Vehemently opposed to the control school's position are the "infinite containment" scientists whose leading proponent is Edward Teller.

Holding a position between these extremes are the "finite containment" scientists such as Hans Bethe. Most of the M.I.T. people mentioned in the book, interestingly enough, could be accorded status in this school. The finite containment scientists argue that though we must maintain our military prowess because of Soviet intransigence, we must also seek effective agreements to end the nuclear arms race. They strongly protested America's sole reliance upon the strategic nuclear deterrent for preventing Communist aggression, and largely through their urgings, Gilpin maintains, a study was initiated on the tactical uses of nuclear weapons, Project Vista. The stirrings of these finite containment scientists also led, he reports, to the creation of M.I.T.'s Lincoln Laboratory to apply electronic systems to air defense.

Though granting the control school relatively scant attention, Gilpin thoroughly analyzes the assumptions that underlie the various views. He neglects to observe, however, that the scientists' failings as political creatures—i.e., they passionately disagree—differ not one jot from those of, shall we say, senators and congressmen.

(Book News is concluded on page 44)



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MICROWAVE FERITES AND FERRIMAGNETICS

By BENJAMIN LAX and KENNETH J. BUTTON, both of the Lincoln Laboratory, Massachusetts Institute of Technology. 608 pages, \$15.00.

This book discusses the solid state of physics of magnetic ferrites, garnets, and related ferrimagnetic materials and leads into a description of the theory and experimental behavior of microwave devices. Incorporated are the latest experimental and theoretical results necessary for a comprehension of the phenomena and applications. The mathematical development is exceptionally lucid and mathematical results are correlated with experimental data wherever possible. Contains an extensive bibliography.

THEORY AND DESIGN OF DIGITAL MACHINES

By THOMAS C. BARTEE and IRWIN L. LEBOW, both of the Lincoln Laboratory, Massachusetts Institute of Technology, and IRVING S. REED, of the Rand Corporation, Santa Monica, California. 336 pages, \$11.50.

Presents an advanced discussion on the theory underlying the design of modern digital machines. Utilizes a systematic and integrated approach combining the disciplines of machine design and switching theory. Included in the discussion are the algebraic and logical foundations fundamental to the theoretical and practical aspects of digital machine design. Though primarily a textbook for senior and graduate courses, the volume will be equally useful for the practicing engineer in the digital field and the mathematician interested in the theory of machines, since the design techniques covered are the results of years of experience in actual machine design.

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By IRWIN I. SHAPIRO, Lincoln Laboratory, Massachusetts Institute of Technology. 216 pages, \$7.50.

The author develops methods, based on the statistical theory of parameter estimation, that can be used to determine ballistic missile trajectories. The application is original. While the treatment is completely theoretical, the motivation came from purely practical considerations, and results of practical interest are included. With very slight modifications, the methods developed can be used to estimate the osculating parameters of satellite orbits.

INTRODUCTION TO RANDOM SIGNALS AND NOISE

By WILBUR B. DAVENPORT, JR. and WILLIAM L. ROOT, Massachusetts Institute of Technology. 393 pages, \$12.00.

An introduction to the statistical theory underlying a study of signals and noises in communications systems. Emphasis is placed on techniques as well as results. Parts of probability theory and the modern theory of random processes are developed in a way suitable for an engineering reader. This material is applied to give a coherent treatment of many basic communications engineering noise problems.

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New Books

(Concluded from page 42)

Have You Seen These Volumes?

RECENT LISTINGS in publishers' announcements that are likely to be of especial interest to Alumni include:

Advanced Calculus for Applications, by Francis B. Hildebrand, '40, Associate Professor of Mathematics at M.I.T. (Prentice-Hall, \$13).

Dynamics of Atmospheric Entry, by Robert C. Duncan, '54, staff assistant to Director of Defense Research and Engineering in the Office of the Secretary of Defense (McGraw-Hill Book Company, Inc., \$12.50).

Electrical Encapsulation, by Marie C. Volk, J. William Lefforge, and Russell Stetson, '30, of Emerson & Cuming, Inc. (Reinhold Publishing Corporation, N.Y., and Chapman and Hall, Ltd., London, \$8).

Experiments in Physical Chemistry, by Professor David P. Shoemaker and Associate Professor Carl W. Garland of M.I.T., a junior-senior level text including new experiments tested at M.I.T. (McGraw-Hill Book Company, Inc., \$8.95).

Inertial Guidance Engineering, by George R. Macomber, '53, and Manuel Fernandez, '54, of Minneapolis-Honeywell Regulator Company (Prentice-Hall, \$14.75).

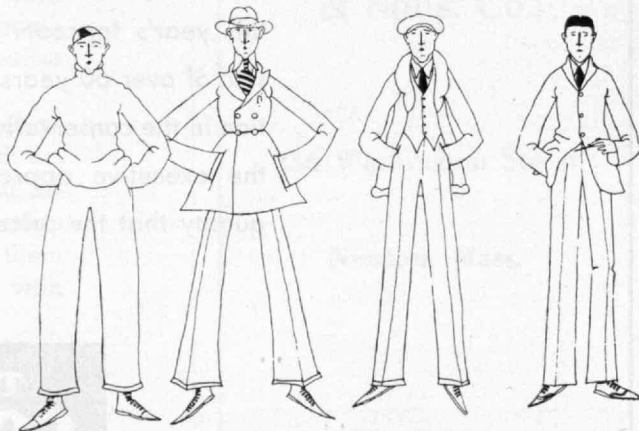
Introduction to Radar Systems, by Merrill I. Skolnik, former staff member, M.I.T. Lincoln Laboratory (McGraw-Hill Book Company, Inc., \$14.50).

Microwave Ferrites and Ferrimagnetics, by Benjamin Lax, '49, and Kenneth J. Button, of M.I.T. Lincoln Laboratory (McGraw-Hill Book Company, Inc., \$16.50).

Quality Control Handbook, 2d ed., edited by J. M. Juran, Leonard A. Seder, '37, and Frank M. Gryna, Jr. (McGraw-Hill Book Company, Inc., \$22).

The Typhoon-Hurricane Story, by Robert E. Fuerst, '48 (Charles E. Tuttle Company, Rutland, Vt., \$2).

Water Supply Engineering, 6th ed., by Harold E. Babbitt, '11, James J. Doland, and John L. Cleasby, for which Rolf Eliassen, '32, of Stanford University, was consulting editor (McGraw-Hill Book Company, Inc., \$12.50).



CLASSES

WILLIAM FAULKNER'S drawings for the University of Mississippi's yearbook illustrate "William Faulkner: Early Prose and Poetry," by Carvel Collins, M.I.T. Professor of English (Atlantic, Little Brown paperback, \$2.25).

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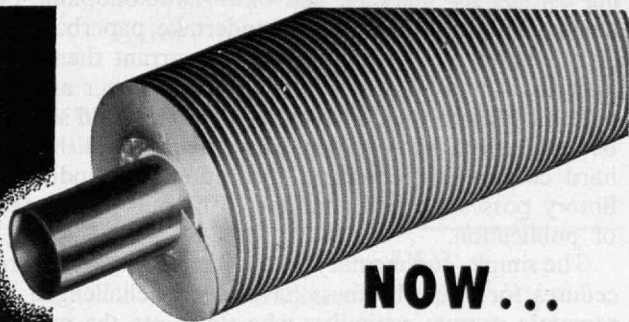
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Publishing at M.I.T.

(Concluded from page 13)

buying. Contributing roles are played by the publisher in gambling on spreading his reprint costs over additional markets to a factor of 5, or 10, or 20; by the bookseller in altering the character of his service from directed sales to self-service; by the author who has had the energy, judgment, and capability of writing a first-class volume which has deservedly earned a position on one or more reading lists; and the buyer, almost inevitably a student, formally or informally constituted, who feels that should he not care to read a worth-while book, he at least should own it, and should he care to read it, would prefer to do so in the comfort and privacy of his own room—marking up the margins, underlining, folding corners for markers, and other antibibliophilic behavior. The M.I.T. Press will undertake paperback reprint editions of books that clearly warrant them, and may occasionally undertake a joint hard cover and paperback edition when differential markets would seem to be best served by so doing. But original publishing in hard covers for permanent institutional or individual library possession will continue to be our staple mode of publication.

The simple, rudimentary, and critically important procedures for doing business have always challenged the romantic venture-capitalists who stray into the publishing of books. And within the benevolent embrace of an academic institution, the scholarly publisher is apt to affect business practices more patterned after those habits of the faculty he admires than those of the corporation that sustains him. Suitably concerned for efficient operation, the business office of The M.I.T. Press will endeavor, and fail, to process each order on the day it is received, to render prompt and accurate billing for all orders, to maintain adequate stock control so that a salable book is always ready for immediate shipment, and to answer promptly and politely all letters of inquiry or complaint. In addition, it shall perform Institute duties, from preparation of monthly time sheets to instruction in the mysteries of its chart of accounts, with good spirit.

In sum, the problems of our business office are, like our other publishing problems, such that we can live with them if we cannot overcome them immediately, and our prospects for becoming a major scholarly and technical publisher, granted good health, and a little luck, are exhilarating.

NEXT MONTH: The Review will feature an address on masers given by Provost Charles H. Townes.

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Club News

Washington Club Plans Student-Alumni Event

The M.I.T. Club of Washington will sponsor a Student-Alumni luncheon on December 27 at the Cosmos Club. An informal affair such as this has been held each year since 1956 to provide a three-way exchange of information among students from the Washington area now at the Institute, secondary school students in the area who have applied or are considering applying for admission, and Alumni who reside in or are visiting the Washington area. Local members of the Educational Council are the primary source of information regarding prospective students, but all Alumni are requested to advise Robert W. Blake, '41, Event Chairman, 1402 Alice Court, Falls Church, Va., of the names of M.I.T. prospects who should be invited to attend.

The Pentagon Luncheon Group began its series of monthly meetings on October 1 with an informal talk by Gerald W. Johnson, Assistant to Secretary of Defense (Atomic Energy), in the General and Flag Officers' dining room. Approximately 20 Alumni were present.

The Club held its traditional fall smoker on October 4 at Hammel's Restaurant, 416 10th Street, N.W. About 35 Alumni were present for this affair which featured a buffet of German cold cuts, beer on tap and singing. Devron and his accordion, a tradition at these affairs, accompanied the many who were so inclined. Although it was reported in last month's issue of *The Review* that the fall smoker had not been scheduled because the Potomac Boat Club was not available, Sterling H. Iverson, '41, Captain USN, Club President, persevered in finding a suitable location and making arrangements for this event.

The Executive Committee held a dinner meeting at Blackie's House of Beef on October 10. Ten of the sixteen-members were present. Walter S. Saunders '57, Treasurer, reported on paid memberships. Although it appeared that only 32 members had paid dues, the statistics were changed the next day when a package was received containing 28 additional dues payments which had been forwarded via Former Secretary John G. Beebe-Center, Jr., '56, now living in Swampscott.

The first dinner meeting was scheduled for November 8 at the Cosmos Club. The remaining Club events are a luncheon on December 27, and dinner meetings at the Cosmos Club on February 26 and on April 25. In addition, the Pentagon Luncheon Group will continue to meet monthly.—Paul M. Robinson, Jr., '44, Secretary, 8009 Jansen Drive, Springfield, Va.

Cleveland Association Plans Holiday Luncheon

The M.I.T. Association of Cleveland will hold a luncheon during Christmas vacation for M.I.T. students and dads in the Cleveland area. Future plans include a cocktail party and mid-winter bus tour to a local industrial plant and a spring social night with wives and dates at the Cleveland Skating Club. The Association enjoyed a dinner and get-together last month.

A boat cruise up the Cuyahoga River concluded the 1961-1962 season last spring. It was a purely social affair with ladies attending. Cocktails were served on board while Alumni enjoyed a "water's-eye" view of Cleveland industry.

Officers for the 1962-1963 season are Jay P. Auwerter, '38, President; Robert J. Fay, '42, Executive Vice-president; Richard G. Wilson, '54, Secretary; Ford F. Miskell, '49, Assistant Secretary; and Robert B. Dirks, '57, Treasurer.

Newcomers to the Cleveland area are encouraged to contact Richard Wilson, Secretary, at HI9-1076, if they would like to receive notice of the Alumni Association's activities. We also keep a current list of local Alumni for those who are interested in contacting friends or classmates in the area.—Richard G. Wilson, '54, 1372 Summit Drive, Mayfield Heights 24, Ohio.

Rochester Group Hears Professor Wood

Professor Robert C. Wood described the "Changing City" on November 1 at a joint meeting and luncheon of the M.I.T. Club of Rochester and the Rochester Council of Social Agencies.

Fall activities started with the annual meeting at Mendon Ponds Park on September 22. The traditional softball game was followed by cold beer and warm steaks. Donald W. Ramsey, '50, was chairman.

Officers elected were H. Sheldon Smith, '31, President; Evan A. Edwards, '37, President-elect; Gordon L. Calderwood, '27, Vice-president; Donald W. Ramsey, Treasurer; and Andrew C. Price 3d, '50, Executive Committee. Re-elected were John D. O'Brien, '51, Secretary, and Gail E. Millard, '50, Assistant Secretary.—John D. O'Brien, '51, Secretary, 50 Pelham Road, Rochester 10, N.Y.

Boston Stein Club Welcomes New Members

New members of the Boston Stein Club were guests on October 30 at a cocktail party and dinner given for members and prospective members only. Winston R. Markey, Associate Professor of Aeronautics and Astronautics at M.I.T., was guest speaker.

An acknowledged expert in the field, Markey brought all Buck Rogers fans (and who isn't?) up to date by explaining M.I.T.'s contributions to the developments which have moved astronautics from the comic strips to Canaveral.—Norman R. Gardner, '53, Corresponding Secretary, 40 West 3rd Street, South Boston, Mass.

Mexican M.I.T. Club Plan Annual Fiesta

The 15th annual M.I.T. Fiesta in Mexico is scheduled for March 7-9. Highlight of the fiesta will be a garden party, "Noche Mexicana." More details may be obtained from Class and M.I.T. Club of Mexico City officers. (Previous fiestas have attracted many noteworthy guests from the United States.)

The Club has begun having a series of monthly speakers in addition to its regular luncheon meetings. Wiechers L. Zeevaert, '40, who designed the highest skyscraper in Latin America, the Torre Latino-Americana, spoke last July on construction problems in Mexico City. Since the city is floating on a soupy subsoil, his ideas were very interesting.

Victor Russillo, U.S. State Department architect, talked in August about project engineering in Yugoslavia. Thomas A. Mann, U.S. Ambassador to Mexico, was among those attending.

In September, Carlos G. Hernández, member of the Mexican Atomic Energy Commission and delegate to the Geneva conference on atomic energy, discussed the discoveries being made by scientific satellites. Richard L. Bolin, '50, spoke in October on the need for industrial research in underdeveloped countries. Mexico, with one-half the per capita productivity of Japan, spends only one fiftieth as much on research. Bolin said research goals should take advantage of the unique capabilities of each nation and cited the tremendous growth of the synthetic hormone industry in Mexico. Manuel S. Vallarta, '21, spoke in November on the application of atomic energy in Mexico.

The Club meets at the University Club each Thursday at 1:30 P.M. Call 25-02-90 if you are visiting Mexico.—James J. Rattray, '48, Secretary, Monte Everest 905, Mexico 10, D. F.

Venus Probe Topic For Route 128 Club

The Route 128 Club of M.I.T. will hear Alan H. Barrett, Associate Professor of Electrical Engineering, discuss "The Venus Probe" on December 5. The planet Venus is likely to be in the news at about the time of the meeting.

The Club, now in its third year, has scheduled special programs and luncheons for Alumni in the Route 128 area, and joint dinners with the Boston Club. Plans include a luncheon in February featuring Roy Lamson, Professor of Humanities at M.I.T., speaking on "Humanities and Engineering: A Unique Experiment in American Education."

The Clubs of Route 128 and Boston will meet together for dinner on May 9 at the Charterhouse Hotel, Cambridge. "Ethics in Business" will be the topic for panel members, Huston C. Smith, Professor of Humanities at M.I.T.; The Reverend Alexander Stewart; William Ruder, Undersecretary, U.S. Department of Commerce; and Roger P. Sonnabend, '46, President, Hotel Division, Hotel Corporation of America.—Robert E. Anslow, '54, Secretary, 82 Woodland Road Lexington, Mass.

Boston Club to Hear Talks on Space Age

The M.I.T. Club of Boston plans to explore during 1962-1963 the impact of the space age on the economics of the Greater Boston community.

Nearly 200 Alumni heard William B. Bergen '37, describe his encounters as president of the Martin Company at a joint evening meeting of Boston and Route 128 Clubs on October 1 at the Skyline Room of the Boston Museum of Science. Bergen explained that not only were technical problems involved in producing and launching a compact space vehicle, but also problems of allocating tasks to small businesses throughout the country.

Alumni, wives and guests viewed a full-scale model of the Telstar satellite as they entered the Museum. Officials guided the early arrivals through exhibit rooms displaying many wonders of the natural and physical sciences. C. Stark Draper, '26, Head of M.I.T.'s Department of Aeronautical and Astronautical Engineering, was guest of honor. Also at the head table were Russell N. Cox, '49, Jay Zeamer, Jr., '40, Presidents of the Boston and Route 128 Clubs respectively and their wives.

Provost Charles H. Townes explained the impact of his invention, the maser, at the November 15 meeting.

Future meetings will include a talk on December 13 by Edward Brooke, the Republican candidate for Massachusetts Attorney General. Hugh S. Ferguson, '23, President, National Research, and Arthur Snyder, Vice-president New England Merchants National Bank, will discuss on January 10 "Financing Small Companies." February 14, Peter T. Demos, '51, M.I.T. Professor of Physics, will describe a "Laboratory for Nuclear Science." A panel of small company presidents will explore on March 14 the problem of "Starting Small Businesses." James T. McCormack, '37, will talk on April 11 about "The Role of Non-Profit Research Organizations."

The Club will conclude its year's activities with a joint dinner meeting on May 9 with the Route 128 Club members at the Charterhouse Hotel, Cambridge. —Charles Hieken, '51, President, 68 Devonshire Street, Boston; Warren W. Heimboch, '58, Secretary, 372 Main Street, Watertown, Mass.

Hawaiian M.I.T. Club Hears Professor Heidt

Lawrence J. Heidt, Associate Professor of Chemistry, met on September 28 with Alumni in Hawaii for lunch at the Wil-lows. He described recent developments at the Institute and his activities in product development and the use of solar energy. Professor Heidt traveled through Hawaii on his way to Japan where he reviewed Japanese work in utilizing solar heat. He also will travel through Europe before returning home and plans to visit Australia sometime in the future.—Franklin Y. K. Sunn, '52, Secretary, 195 S. King Street, Honolulu 13, Hawaii.

Long Island Alumni Gather With Freshmen

The M.I.T. Alumni Club of Long Island sponsored its first Freshman Get-Together on August 28. The affair, held at the Kollsman Instrument Plant in Syosset, was attended by over 65 freshman, undergraduates and Alumni from the Long Island area. Speakers were Myron A. Cantor, '39, Club President; Irving D. Jakobson, '21, Long Island Educational Council Chairman; and David B. Nicholson, '42, President of Kollsman Instrument Corporation. An interesting tour of the Kollsman facilities followed an active question-and-answer period. The object of the get-together was to acquaint the freshmen with the responsibilities of an M.I.T. education and future career opportunities on Long Island. The event chairman was Robert I. Kraus, '42, and committee members who arranged the affair were Stephen E. Eppner, '45, Robert M. Franklin, '34, Theodore W. Henning, '46, Adrian G. Marcuse, '42, John J. McElroy, '59, and Neil W. Perdew, '26. Bob Kraus, who also is chairman of the Club's newly established Community Relations Committee, originated this idea.

The annual beer party for Long Island Alumni and their wives was held on September 21. The featured speaker was William I. Stieglitz, '32, Chief of Design Safety and Reliability, Republic Aviation, and his topic was flight safety. Co-chairmen of the event were Julius Friedman, '27 and Warren C. Obes, '49.

A scrumptious Swedish smorgasbord dinner was scheduled for members and wives of the Long Island chapter on November 9 at the Sky Club in Garden City, L.I. Co-chairmen for this event were Jimmie Chin, '56 and Nelson R. Disco, '57. Sponsors for the dinner were Pan Am, SAS and the Clipper Line.

Club events later in the season will include a dinner on January 18, a March dinner meeting which will include a tour of Univac facilities and a panel discussion on electronic computers, the annual M.I.T. Dinner next May 17, and a June fishing trip.—Jimmie Chin, '56, Secretary, 67-15 152d Street, Flushing 67, N.Y.

McGuire AFB Host To New Jersey Club

About thirty members of the M.I.T. Club of Northern New Jersey participated in a field trip on October 20 to the USAF SAGE facility at McGuire Air Force Base, N.J. A briefing was given on the air defense operation of the New York sector. A tour of the operations and control rooms followed.

The winter meeting will be December 4 at the Hotel Suburban, Summit, N.J. Charles P. Kindleberger, Professor of Economics at M.I.T., will speak on the European Common Market. The spring meeting is scheduled for March 13 at the Hotel Suburban, East Orange, N.J.

Marshall G. Schachtman, '57, Chairman of the Membership Committee, has begun a drive for active membership.—Carlo N. DeGennaro, '53, Secretary, 905 Hudson Street, Hoboken, N.J.

New York Club Visits Power Station

One hundred and fifty New York Club members and guests recently visited Consolidated Edison's privately financed, atomic power station at Indian Point, N.Y. Harland C. Forbes, '23, Chairman of the Board, greeted the guests, and C. Wesley Meytrott, '27, Vice-president, was host.

Long Island Alumni of M.I.T. will hold a dinner meeting on January 18 at Patricia Murphy's Restaurant. Two Nassau County executives will exchange views on "What's Ahead for Government in Suffolk and Nassau Counties."

The Club is proud to report recent recognition of its members. Howard J. Samuels, '41, was selected man-of-the-year for 1962 by his community, Rochester, N.Y. G. Lowell O'Daniel, '53, was appointed vice-president of production at Lever Brothers. William O. Boschen, '44, President of Ralph B. Carter and previously with Minneapolis-Honeywell, has been elected to the Young Presidents' Organization. E. Donald Gittens, '35, has been selected vice-president in charge of government operations for American Bosch Arma. John T. Burwell, Jr., '34, was appointed an officer of the American-Standard Corporation, and is now vice-president of research. Alfred E. Busch, '37, President of Keuffel & Esser, was elected to the Board of Laboratory for Electronics, Inc., Boston. D. Louis Tonti, '40, was named Executive Director of the Garden State Parkway.

Heard from recently were Lawrence G. Brown, '55, in Esslingen, West Germany on business; John M. Giles, '21, independent oil producer, who stopped in at the Club with his wife on their way from Texas to Europe; and John E. Preschlack, '54, Club Treasurer, on a three-month business trip to England for McKinsey & Company.

The Club regrets the loss of Valentine G. Gahnkin, '22, who passed away last fall at the age of 74.

Club membership is about 1,400, including over 50 new members. The 1962-1963 Membership Directory will be distributed in January.—James M. Margolis, '52, 232 Madison Avenue, New York City, Chairman of Publications; Frank P. Brunetta, '49, Secretary, 1 Old Oak Court, Syosset, Long Island, N.Y.

Dean and Mrs. Harrison Guests of Japan Group

The M.I.T. Association of Japan entertained Dr. George R. Harrison, Dean of the School of Sciences at M.I.T., and Mrs. Harrison on September 14 at a barbecue-style garden party at Chinzanso, Tokyo. Twenty-eight members, including eight of American nationality, attended the opening event of 1962-1963.

Kenkichi Iwasawa, Professor of Mathematics, and Lawrence J. Heidt, Professor of Chemistry, are scheduled to speak to the Association sometime in November.—Yukio Hori, '57, Secretary, 584 2-Chome, Kugayama, Suginami-Ku, Tokyo, Japan.

Sloan Fellows

Since the printing of the 1962 Directory of Sloan Fellows, some changes of assignment have been received. **G. Lowell O'Daniel, '53**, has been elected production vice-president of Lever Brothers with responsibility for supervising and co-ordinating the activities of the company's manufacturing and distribution divisions. . . . **Peelamedu R. Ramakrishnan, '53**, Principal of the Coimbatore Institute of Technology, has been re-elected to the Indian Parliament for another term of five years. . . . **J. Lee Everett, 3d, '59**, is now manager, engineering and research, Philadelphia Electric Company. . . . H. J. Heinz Company has announced the appointment of **John B. Carnahan, '61**, as manager-distribution. . . . **William Blair Thompson, '60**, Saginaw Steering Gear Division of General Motors, is the co-inventor of Patent 3,022,772, a rotary power steering valve with torsion bar centering. . . . **Raymond J. Schultz, '62**, is the new chairman of the Mid-Michigan Section of the Society of Automotive Engineers. . . . Business Week, June 30, 1962, issue, featured **Robert L. Gibson, Jr., '55**, President of Libby, McNeill and Libby, in a cover picture and an article under "Management." . . . **Arthur V. Sommer, '59**, has been promoted to the new post of executive assistant to the Arma Division manager, American Bosch Arma Corporation. —**Peter P. Gil**, Secretary, Room 52-455, M.I.T., Cambridge 39, Mass.

Happy Birthday

Congratulations are in order during December for 26 Alumni who will celebrate, respectively, their 90th, 85th, and 80th birthdays, as listed below with dates of birth:

December, 1872—**ARTHUR W. TIDD, '94**, on the 9th; **JOHN S. EYNON, '96**, and **GEORGE W. SHERMAN, '94**, on the 10th; **KARL A. PAULY, '96**, on the 18th; **LUTHER CONANT, '95**, on the 21st; and **ARTHUR S. ROGERS, '94**, on the 29th.

December, 1877—**EDWARD C. SMITH, '05**, on the 10th; **HARRY V. ALLEN, '01**, on the 14th; **JAMES G. LEIPER, JR., '99**, on the 19th; **NORMAN A. DUBOIS, '01**, on the 25th; **GEORGE W. ALLEN, '01**, and **WILLIAM B. COFFIN, '07**, on the 30th.

December, 1882—**CHARLES L. KASSON, '06**, and **J. NEWELL STEPHENSON, '09**, on the 3rd; **ROBERT S. BEARD, '05**, on the 5th; **ROBERT M. PHINNEY, '04**, on the 7th; **EUGEN F. KRIEGSMAN, '05**, on the 8th; **LEONARD W. CRONKHITE, '05**, on the 11th; **ARTHUR O. CHRISTENSEN, '07**, on the 12th; **FRANK M. CARHART, '05**, on the 18th; **STEPHEN L. BRADLEY, '04**, and **JEAN P. VARIAN, '06**, on the 20th; **FRITZ C. BICKFORD, '05**, on the 24th; **E. FARNUM ROCKWOOD, '04**, on the 25th; **C. EUGENE FOGG, '06**, on the 27th; and **COLBY DILL, '06**, on the 29th.

Future M.I.T. Club Meetings

Following are the dates scheduled at the time of printing for members of the M.I.T. Faculty, staff, and Alumni Council to visit M.I.T. clubs during December and January. For more details consult the club secretary in your city.

December 4, 1962—Newark—Professor Charles P. Kindleberger

Secretary: Colonel Carlo N. DeGennaro, '53, 905 Hudson St., Hoboken

December 5, 1962—Route 128—Professor Alan H. Barrett

Secretary: Robert E. Anslow, '54, Raytheon Company, Lexington

December 27, 1962—Rochester—Professor Avery A. Ashdown, '24

Secretary: John D. O'Brien, '51, Eastman Kodak Company

January 10, 1963—Boston—Hugh S. Ferguson, '23

Secretary: Warren W. Heimbach, '58, Scientific Development Company

January 21, 1963—Pittsburgh—Professor Roland B. Greeley

Secretary: James B. Allen, '36, Pittsburgh Chemical Company

Class News

'91

Here are two letters of interest from '91 members. The first is from **Charles Urban** of Cincinnati and came in response to a note asking him to come to our 71st anniversary last June: "I have purposely delayed answering your gracious note in the hope that I might be able to attend our 71st Reunion. However, that hope proved to be a vain one, and I must now regretfully inform you that I will not be able to attend. That has happened several times and is rather exasperating, but it will not happen again for the reason that I am now looking forward to the reunion of 1963. By the time that rolls around I will have closed my professional career, and I don't know of anything that will stop me.

"I don't know of anything in particular to write about. I have always related my personal experiences at Tech but there is a doubt in my mind as to whether or not those are of interest to the class. . . . You probably know I played on the freshman football team, and we frequently played against the members of the Varsity team in order to give them practice; on that team was a big husky named Ladd, (Frank, '88) who was a fine chap and a wonderful player. During a game one afternoon, while I was carrying the ball, I frequently eluded Ladd and that aroused his ire. He finally caught me and gave me the roughest tackle I ever experienced. He literally raised me from the ground and slammed me down hard. That was quite a jolt but it didn't hurt me nor did it increase my

admiration for Ladd. However, the finest part of the whole circumstance was that Ladd afterwards came up to me, apologized, and we became good friends. That proves one thing conclusively and that is that Tech raises men who, if they make an error, have the moral courage to rectify it. . . . I might just as well add right here, a Merry Christmas and a Happy New Year. Yours sincerely, **Charles H. Urban.**"

The second letter is from **Bill Keene**, widely-traveled in many lands, now back in New England, a lovable man, independent thinker, always interesting. Accept our best wishes, Bill, and do not let this be your last letter to us. "I am feeling fairly well, but I no longer write much, only checks, etc., so this will be my last note. You flatter me; I no longer go to Vermont as my motor drives are limited to about 30 miles, after which I am tired. I stay in my apartment when it is icy and walking is slippery; in fact, I ease up as the end is approaching, presume it is the same with you. I think you are a little older than I. What are you, going on 93? With best wishes, Bill."—**W. Channing Brown**, Secretary, 15 Forest Avenue, Hastings-on-Hudson, N.Y.

'94

The Review recently received a letter from the Smithsonian Institution in Washington, D.C., in which **Charles G. Abbot** wrote: "As for myself, except for a back that tires rather easily since my fall, February 8, I am very well. With two assistants I am preparing forecasts of precipitation through 1969 for 20 foreign cities. My forecasts for 32 U.S. cities through 1967 (Smithsonian Publication 4390) is turning out as well as hoped. The dry and also cool spring and summer here at Washington followed predictions. The Smithsonian, besides its free distri-

bution of 1,500 copies, has sold, at \$1.25 each, over 4,500 copies of Publication 4390, and many of Publication 4471 on temperatures."

Last May 28, the Washington Evening Star had this to say about him: "Dr. Abbot, an astrophysicist, has spent most of his life studying the sun and the moon and other planets. He came to the Institution in 1895, and in 1928 became its secretary—a word he once said befitted 'a young lady of pulchritude who takes notes.' Since his retirement in 1944, he has busily been refining a theory of predicting weather years in the future. From his tower office (in the Smithsonian) he has traveled throughout the United States via weather charts and has now branched out to more of the world. 'I'm working on Kiev, Russia, right now,' said Dr. Abbot, who had just finished looking at 104 years of rainfall in St. Louis.

"Dr. Abbot says there is a sun-based weather cycle—"The sun isn't a perfectly constant star. It varies in a regular period of 273 months.' From this theory he computes his weather predictions. Sometimes he has been accurate, sometimes not, but this seems not to bother Dr. Abbot who still has bright blue eyes after nearly a century of looking at the world.

"He has long expounded the theory that some day the world would turn to the sun for its heat and power. Last week, 26 years after he first showed his 'sun engine,' he could joke about his first disastrous demonstration. . . . Parabolic mirrors concentrated sun rays on pyrex tubes, a heat-sensitive chemical inside the tubes raced through boiler coils, and this operated a steam generator. But while thousands stood around to watch this machine in 1936, Dr. Abbot recalls with a grin, 'the solder which sealed the tubes holding the chemical got so hot it melted.' He refined his machine, on which his wife cooked gingerbread at midnight when he was first perfecting it out on Mount Wilson, Calif. A model of the machine is now encased in glass at the Smithsonian.

"The astrophysicist, who in 1958 wrote

a book about his 'Adventures in the World of Science,' stumbled into it all because he wanted to see Boston. 'Some of my friends were going to the Massachusetts Institute of Technology to take entrance exams. I thought it was a good time to see the place so I went along. But then I was afraid I'd get lost so I went to take the exam too.' Of course he passed and was graduated in 1894, getting his master's in physics in 1895, and then stepping immediately into the (Smithsonian) Institution. . . . Dr. Abbot, a one-time New England farm boy, said that his interest in the sun and other planets did not grow out of a boyhood fascination. 'I never much cared about the sun. In fact, I was interested in things mechanical and I always hoped it would rain so I could stay inside, rather than having to go out and plant corn.'"

In a letter directed to his classmates of '94, Dr. Abbot says: "When on a total solar eclipse expedition to the South Seas, in 1907, I learned to sing Molloy's 'Boatswain Song' from the lips of Admiral Moore. On numerous occasions in the past 55 years I have sung this song by request for many groups.

"It has now been requested that, being 90 years of age, I make a record of this song. I find that if 100 subscribers at \$1.75 were found, I could make a 10-inch long-playing (33 $\frac{1}{3}$ r.p.m.) record containing this song, and also two amusing recitations I learned 80 years ago. To see if the project is practicable, I venture to ask how many (if any) of your associates and acquaintances would probably wish to buy such a record. Charles G. Abbot."

'95

This is the last month of 1962. Our Eighty-Plus Club has its 14 members still on deck able to be up and about and sit on the grandstand and watch the world go by at a more rapid pace than when we were that age. . . . One sub-

ject under discussion is another use for the income from our original 50-year gift of \$25,000 to M.I.T. This was to apply to one or more scholarships for descendants of '95 members. As no applications for scholarships were received by M.I.T. from these descendants, the income from the fund has been combined with the M.I.T. Loan Fund for students so in that way it has been a benefit. At the same time its amount has increased in value by the amounts of interest earned. More about descendants use of interests from the fund will be found by our classmates in the December issue of our Eighty-Plus Club bulletin sent only to 95 members. —**Andrew D. Fuller**, Secretary, 120 Tremont Street, Boston, Mass.

'96

A birthday gift of "The Technology Jubilee Extra" of the Boston Evening Globe of June 14, 1916, gives a detailed account of the celebration of M.I.T. moving into new buildings in Cambridge. On the first page is a picture of Charles A. Stone, '88, toastmaster of the banquet; Alexander Graham Bell and John J. Carty, engineer of the telephone company that provided communication with Tech groups in 34 cities. There were 4,000 at the dinner in Symphony Hall. On the last page is a record of the Alumni who attended, listed by classes together with a picture of four members of the Class of '68 which included Professors Richards and Pope. There were 113 members of the '96 Class present that evening.

Elmer H. Robinson of 19 Myrtle street, Boston, died September 28, 1962. He was with the New England Telephone and Telegraph Company for 43 years. During the war he was recalled for duty at Portland, Maine. He was a member of the Telephone Pioneers of America and belonged to several Masonic orders. . . . **Joseph W. Clary** of 250 14th Avenue, N.E., St. Petersburg, Fla., died the previous week on September 21, 1962. He followed his Course XIII training and was principal naval architect in the Bureau of Ships, U.S.N., when he retired 17 years ago. During his early years with the Navy, the battleships 'Kearsage' and 'Kentucky' were designed. He is survived by his wife, Katherine; two sons, Joseph F. of Philadelphia and Benjamin B. of Washington, D.C.; three daughters, Mrs. Rosa Lee Collins, Mrs. Katie T. Barnett, both of Montgomery, Ala., and Mrs. Elizabeth C. Treadwell of Washington D.C.; seven grandchildren and seven great-grandchildren.

Two of our '96 classmates will celebrate 90th birthdays in December: **John S. Eynon**, of San Diego, on the 10th; and **Karl A. Pauly** of Schenectady, on the 18th.

The secretary visited **George E. Harkness** at his Dorchester home a few days before he was to start on his annual winter sojourn in Florida. I knew he was a sophomore with us, having been a freshman with '95 and that he spent the intervening year at sea on his father's ship sailing from San Francisco to England.

Deceased

JOSEPH W. CLARY, '96, Sept. 21*
ELMER H. ROBINSON, '96, Sept. 28*
GEORGE L. SMITH, '98, Sept. 6
FRANCIS H. MCCRUDDEN, '00, Oct. 9*
WILFORD W. DEBERARD, '01, Sept. 23*
AUSTIN Y. HOY, '04, Aug. 14*
HARRISON A. WHITNEY, '04, Aug. 18*
TERRELL BARTLETT, '06, Aug. 25*
HENRY P. CARRUTH, '06, Aug. 11*
WILLIAM C. ARKELL, '10, Oct. 8*
CHARLES O. PERRINE, '12, May 18*
PHILIP T. REDFERN, '12, Aug. 7*
JOHN D. SHORE, '12, Sept. 13*
CLARENCE A. STEWART, 12*
RALPH M. TORREY, '12, July 20*
JOHN J. HICKEY, '16, Aug. 25*
THOMAS G. JEWETT, '16, Sept. 8*
HAROLD O. WHITNEY, '16, Sept. 27*
HERBERT W. BARRETT, '19, Aug. 26*
KENNETH F. AKERS, '20, June 25*
HAROLD R. KEPNER, '20, Aug. 17
CARL T. LEANDER, '20, May 25*

ARTHUR S. LITTLEFIELD, '20*
DANIEL E. MCCARTHY, '21, Aug.
WILLIAM G. MAYER, '22, July 23, 1961*
WILLIAM J. MILLER, '22, March 20*
IAN H. PARSONS, '22, Dec. 14, 1961*
MALCOLM K. SHEPPARD, '22, June*
CHARLES F. MCQUISTON, '23, July 20*
EGER V. MURPHREE, '23, Oct. 29
LOUIS H. SKIDMORE, '23, Sept. 27*
RICHARD L. NIMS, '24, May 12*
HERACLIO ALFARO, '25, Aug. 10*
ELLIOTT E. McDOWELL, '25, Oct. 2*
WILLIAM C. WILDER, '26, June 11*
GEORGE W. BROWN, '27, Aug. 15*
HERFORD T. BLAKE, '29*
JOSEPH H. JENNINGS, '29, Dec. 4*
NEWMAN H. DRAKE, '30, Aug. 25*
DANIEL J. HUGHES, '30, Oct. 1, 1961*
GILBERT A. LOWN, '31, Aug. 20*
MORRIS L. BROWN, '33, Sept. 26, 1961*
RUSSELL S. MURPHY, '33, Aug. 19*
MILTON SILVERMAN, '36, Feb.
MALCOLM CHESLEY, JR., '37, Sept. 10

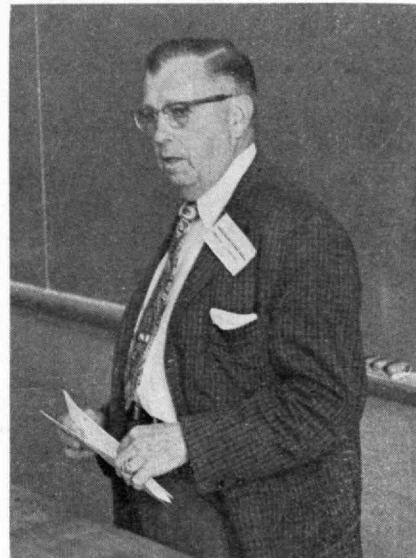
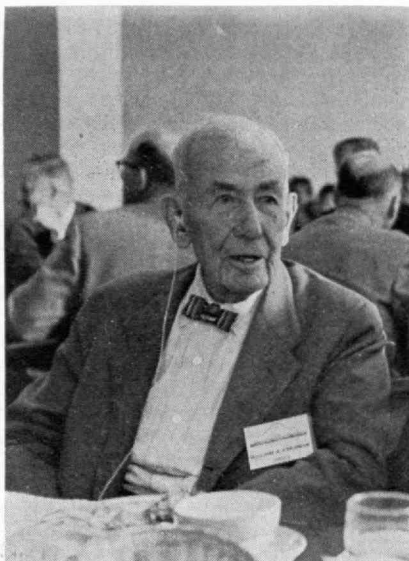
* Further information in Class News.

The passage around Cape Horn was not as difficult as the accounts of the experiences of those going to California in '49, because his passage was from the West. He told me that at one time his father had arranged for a Chinese pilot who came aboard with 100 sailors (a man for each rope) to sail the full-rigged ship up a crooked river in China. A sailing ship is much steadier than a steamer. In fact, a retired Maine sea captain told me of backing a full-rigged ship down the Potomac.—**James M. Driscoll**, Secretary, 129 Walnut Street, Brookline, Mass.; **Henry R. Hedge**, Assistant Secretary, 105 Rockwood Street, Brookline, Mass.

'98

When **Lester Gardner** selected the beaver as the animal best representing M.I.T., this was a momentous event. There have been other momentous events in the life of the Class of '98, which there is not space enough in the Class News to enumerate and describe, but which will readily come to the minds of the readers. The class is now approaching its 65th Anniversary, which will be observed in conjunction with Alumni Day, June, 1963. It seems desirable, each month prior to this occasion, to have '98 Class News appear in *The Technology Review*. This subject was carefully discussed recently by the assistant secretary, **F. A. Jones**, and the secretary, who reached the following conclusion: As the members of the Class have practically all retired from active business life, they have little to report of their own present doings; however, almost all have children, grandchildren, great-grandchildren, or even organizations which they have founded, all of which are active, concerning whom or which they can write letters for Class News which will interest their classmates.

Illustrative of this idea is an article which appeared recently in the *Boston Sunday Herald*, under the title, "Babson Develops Unique Approach to Education," written by John Chaffee, Jr.: "The world's largest revolving replica of itself and a championship professional basketball team have obscured significant features of the nation's only accredited independent college of business administration. For while Babson Institute in Wellesley is recognized within the business world as something unique in American higher education, the public image of the school too often is limited to a 21-ton outdoor globe and pre-season practice sessions of the Boston Celtics. . . . The globe, 28-feet in diameter, rotates about its axis and revolves on its carriage in such a way as to represent accurately both the passage of day and night and the successive seasons of the year. It attracts scores of tourists and student groups every day. It's the best thing of its kind. The Celtics, too, are the best of a kind. And in recent years the school itself has made major strides toward becoming one of the best in the field of business administration. Now, undergraduates who major in business



Class presidents who attended the Fourth Annual Alumni Officers' Conference included (top) William A. Kinsman, '99, Donald G. Robbins, '07, (below) Raymond A. St. Laurent, '21, and Parke D. Appel, '22.

administration, like those in education, traditionally are the subject of derision. This despite, or perhaps because of, the fact that American colleges and universities graduate more business and education majors every year than any other kind of students. And in a business-oriented nation which became great primarily because of mass public education, this is undoubtedly as it should be. But more criticism is leveled at schools of business administration and education than any other. This, too, is probably natural. To meet responsible criticism and to keep abreast of changing needs in the business world, Babson in recent years has introduced a number of new programs and modifications including more liberal arts course, a three-year degree program, and new evening courses for young executives.

"It was founded in 1919 by **Roger W. Babson**, a highly successful financier who is considered something of an eccentric by long-time Wellesley residents, primarily because he once ran for president on the Prohibition Party ticket. Until

1942 Babson was a one-year school of higher education in business which awarded an attendance certificate. It was taken over by the Navy during World War II. Following the war it was reorganized into a degree-granting college of business administration. It was accredited by the New England Association of Colleges and Secondary Schools in 1950. A graduate program was first offered in 1951. Roger Babson established the school like a business with a corporation instead of stockholders which elects a board of trustees. Babson, now 86, is a member of the corporation. The school currently has an enrollment of about 700 students, with a faculty of 34. This means the student-faculty ratio is about 81-1. Another aspect of the Babson program that is somewhat unusual in higher education today is the comparatively rigid curriculum. Students have fewer electives and specialize in a particular aspect of business until their senior year. Thus each faculty member knows what his students have taken in previous terms and what will lie before them.

And because the school is small and can't command the range of resources of a great university, it has essentially a teaching rather than research staff. Dr. Kriebel foresees no rapid increase in Babson enrollment, except perhaps in the new evening program. The school will soon embark on a modest \$500,000 development program. And to continue to develop broadly educated businessmen, Babson will provide not more liberal arts courses as such but will strive, in Dr. Kriebel's words, 'to treat in liberal fashion truly professional courses.'

This article is illustrated by two pictures: one of the "Babson Globe" and the other of President Kriebel. Congratulations, Roger, and good luck!—**Edward S. Chapin**, Secretary, 271 Dartmouth Street, Boston 6, Mass.; **Frederic A. Jones**, Assistant Secretary, 286 Chestnut Hill Avenue, Brighton 35, Mass.

'00

Dr. **Francis H. McCrudden** died October 9, 1962. He was born January 5, 1879, in Boston and graduated from M.I.T., Course V, in 1900. For the next four years he was engaged in research at the Massachusetts General Hospital. He then attended Harvard Medical School, from which he graduated in 1908. From 1908 to 1911 he studied and served as assistant in pharmacology and therapeutics at the University of Wurzburg, Germany. Following that he was with the Rockefeller Institute as head of the chemical department from 1910-13; director of laboratories, Robert B. Brigham Hospital from 1913-23; and professor of applied therapeutics, Tufts Medical School, from 1914-23. During the World War I he was captain and later major in the Medical Corps, U.S.A., and was on active duty as chief of laboratory service at U.S.A. General Hospital No. 10. In 1928 he became assistant medical director of the New England Mutual Life Insurance Company in Boston and remained with that company until his retirement. He was a member of the American Medical Association, American College of Physicians and American Association for the Advancement of Science. He was also a member of the U.S. Public Health Service, American Society of Biological Chemists, and the Society of Experimental Biology and Medicine. He was the author of two books and many papers on chemistry and related subjects, especially on diseases of disturbed metabolism. Dr. McCrudden married Clara Sargent of Brookline in 1919. She survives him, together with a son, Richard of Aspen, Colo., and a daughter, Mrs. Eleanor Hampton of Sharon.—**Elbert G. Allen**, Secretary, 11 Richfield Road, West Newton 65, Mass.

'01

I have just received word through one of my fellow class secretaries of the death of **Wilford W. DeBerard** in Chi-

cago on September 23. He was 87 years old. He had a varied and distinguished career and was one of our most prominent classmates. When he died he was chief water engineer for the city of Chicago, and was considered the dean of American water works engineers. He had been employed by the city since 1941 and became chief water engineer when the department was reorganized in 1953. He was in charge of much of the engineering work for the new city filtration plant now under construction.

Before becoming a city engineer he was western editor of the *Engineering News Record* for 31 years and held several other engineering positions. He was graduated from Beloit College in 1896 and from M.I.T. in 1901. He began his public career in Denver in 1896 and subsequently served in various engineering capacities in Philadelphia; Harrisburg; Columbus, Ohio; Oakland, Calif., and New York City. He was an honorary member of the American Waterworks Association and the American Society of Civil Engineers. In 1954 he received the Fuller Award from the Illinois section of the American Waterworks Association. His hobby was participation in a society for barbershop quartet singing. He leaves a daughter, seven grandchildren and five great-grandchildren.

I have a very interesting letter from Mrs. **Will G. Kelley**. She has moved and bought a small house in Santa Barbara in the area known as the "Riviera." It has a view and a small garden. Her address is 396 Alturas Road, Santa Barbara. I quote: "I note with interest that the **Philip Moores** are still in Easton. Why Florida? Why not jet out to California. They would find many former neighbors in this area. I would be happy to have any class members call if they would notify me in advance so that I could have a beverage, either hot or cold, ready." She has two sons, one in France and one studying at "Cal" in Berkeley, and a daughter who lives in Illinois. She is very public spirited, reads *The Review* carefully and uses its contents in her position as chairman of National Defense and Patriotic Education for the Santa Barbara chapter Daughters of American Colonists. I know that she would be glad to hear from any classmate who cares to contact her. Here endeth the notes for December.—**Theodore H. Taft**, Secretary, Box 124, Jaffrey, N.H.

'03

Our classmates will pardon the secretary's early request for their enthusiasm and plans regarding our 60th Reunion at the June Commencement next spring. Your early response is eagerly awaited. . . . **Clifton A. Towle**, VII, has announced his new address as 315 Orchard Drive, Mt. Lebanon, Pa. . . . **Paul R. Parker**, XIII, has a new address at 57 High Street, Kennebunk, Maine. . . . We regret to announce the passing of our beloved classmate, one of the first women to graduate from M.I.T., Mrs. (Dr.) **Sophie Gifford (Thayer) Blunt**, VII, who

died on July 28, 1962. Mrs. Blunt was born in Chicago and lived afterwards at 259 Washington Street in Braintree for 84 years. She was a graduate of Thayer Academy, Boston College, and among the few women courageous enough to enter the M.I.T. atmosphere at that early date. She taught in Boston Public Schools and at the Thayer Academy until 1906 when she married Arthur A. Blunt and settled in St. Johnsbury, Vt., for the next eight years. Mr. Blunt died in 1954, just three months before their 50th wedding anniversary. Mrs. Blunt is survived by her son, David T.; two daughters, Mrs. Gertrude W. Palmer of Red Wood City, Calif., and Mrs. Mary G. Gifford of Squantum, Mass.; a brother, Elisha N. Thayer; a sister, Miss Maria A. Thayer, both of San Jose, Calif.; eight grandchildren and four great-grandchildren.

Mrs. Blunt was a founder, member and first president of the Braintree Historical Society. She was an active member of the American Association of University Women, the Technology Women's Association and the Braintree Garden Club. She was well known for the many kinds of flowers she grew and she spent much time each year arranging exhibits for the children in the town's schools. She was also a former town meeting and school committee member. We will keenly miss her jovial and spirited presence at our yearly commencement table.—**John J. A. Nolan**, Secretary, 13 Linden Avenue, Somerville, Mass.; **Augustus H. Eustis**, Treasurer, 113 State Street, Boston, Mass.

'04

The deadline for class notes is here again and now once more there is no news to tell. Your secretary wants to make it plain there is no water in a dried up well. He needs some words from Pete and Tom and Jake, and also items brief from Sigma Bill. All these a newsy bulletin would make, and give to many classmates quite a thrill.

So take your many pens in many hands, in spite of shaky arms (we're getting old). We'd like your notes from this or other lands. The total should be worth its weight in gold.

Our memories keep green in spite of years, we often think of Tech on Boylston Street, forget the recent days of grief or tears. The thoughts of college days are often sweet; perhaps we never write to Sam or Joe, although we were real pals in other days. Your message in Class Notes would please, I know, and one from him would make it work both ways.

After the above was written, the Alumni Office forwarded two obituary notices. . . . **Austin Y. Hoy** died in Bridgeport, Conn., on August 14. Before coming to M.I.T. he worked for the Sullivan Machinery Company and later headed a company of his own. In World War I he served as an artillery officer in the British army. . . . **Harrison A. Whitney**, well known architect, died in Portland,

Ore., on August 19. He was one of the supervising architects of the 1905 World's Fair and later his firm designed many important buildings in Portland. He was prominent in various civic organizations there. He is survived by his wife, two daughters and several grandchildren.—**Carle R. Hayward**, Secretary, Room 38-304, M.I.T., Cambridge 39, Mass.; **Eugene H. Russell, Jr.**, Treasurer, 82 Devonshire Street, Boston, Mass.

'05

Andrew Fisher, II, and X, becoming statistical, has reminded me that 60 years ago last September the Class of '05 won our second Field Day, thereby getting our numerals on the cup twice. (By the way what became of the cup?) He suggests that I write each living member of the three teams, relay, tug-of-war and football asking each to answer to his physical condition, etc., today—"etc." meaning news for The Review. I shall do that eventually, but why not report without further prodding? . . . I just received a two-page letter from **Roy Allen**, III, which should be presented in full (a copy will be sent to those desiring it). He and Grace had just returned from a 12,000-mile automobile trip through much of the Midwest and New England, returning via Quebec, Montreal, Ottawa, Canadian Rockies, and the Seattle World's Fair, where he saw **Joe Daniels**. Joe is still working* on his history of the coal-mining country in Washington, and from the statement that Joe had just returned from a rather rough camping trip in the northern part of British Columbia, I judged that he was in good health. Roy had been in touch with **Hallet Robbins**, I. Hallet had re-visited Hawaii this summer, had visited several Methodist retirement homes in California and decided he likes the present residence in Phoenix the best.

Through the Class Secretary of '21 I received a notice of the annual dinner meeting and ladies night of the M.I.T. Club of Northern New Jersey on May 17. "Doc" Lewis was the guest speaker. I wish I could give you 'in toto' the build-up in the notice, but I think you can believe this, and I quote: "Their wives (of Alumni who took Course X) know him through their husbands, for many ended up with some traits and techniques from the impact of his personality upon them. This is most noticeable in relation to the technique of argument where his skill is unexcelled." He could argue a bit 60 years ago. . . . I had a birthday card from **Jack Flynn** and his senora in Buenos Aires. He said "we finished up (I hope) another strike yesterday. 'Scuse delay in mailing check. Our post office has been on a strike for over a month." My guess is that he is in good health. . . . A note from **Leonard Cronkrite's** desk says "Atomium Corporation has just moved into its new plant, built for us by our half-owner, the Perkin-Elmer Corporation." . . . Before me is a four-page, personally written letter from "Mr. Correspondence," **Willard Simpson**. It is an-

other of those interesting personal letters which is hard to condense. Here are the results, also another promise that anyone sending in a bit of news and a request for a reprint will get one. I quote: "We have been exceptionally busy for the last three or four months, in fact, just swamped. It seems like I have had more to do than usual. I have an office of eight or ten men, and as old as I am I am still administering it completely to the best of my ability and seem to be getting ahead. I not only have to administer all of the work and do all of the correspondence and check everything that goes out, but I have my own drawing table which has to be occupied at least half of the time in order to get out my share of the work. Engineering work, structural engineering work, is very confining and exacting, and it keeps you at your wit's end at times—testing your ingenuity beyond anything else. I have an office of eight or ten very splendid men, some of them young, most of them right close around forty and very faithful, careful and good engineers. Therefore, we seem to get all of the difficult jobs. Our competitors get the easy ones. Well, I guess that is all right. It has earned us exclusive and complete engineering work of five or six of the largest industrial plants in this part of Texas, and they alone could keep an office busy.

"I guess that you are in the midst of arranging for '05's part in the reunion during M.I.T.'s graduation day. I would like to be there. I am saving up, however, both energy and finances, to attend the 1965 reunion, my golly our 60th Reunion! There ought to be more celebration for that reunion than there was for the 50th Reunion when we were the honored class. You remember you and I sat way up there high among all of the professors and Faculty. I wonder if you remember at the time my remarking, as I looked out on that bunch of youngsters, that I suddenly realized that their fathers weren't even born when we graduated from M.I.T. So, we were already their grandfathers. I have sure enjoyed my Masonic affiliations here. You know I have been very active in Masonry ever since I returned from M.I.T. to this city, and I have served in the East in practically every Masonic Lodge, with the exception of the Blue Lodge. I am past-presiding officer in practically every Masonic organization in this town with the exception of the best one of all, the Blue Lodge. I got interested in the Knights Templar early in my Masonry and became an officer. I was interested in the drill teams and the drilling and have been so ever since, and I have had quite a part in the drill teams of not only San Antonio Commandery but the Grand Commandery of the State of Texas where I attend regularly every year and have been one of the judges for 10 years; this year they appointed me chairman of the Field Drill Committee in charge of all the field competitive drills next April. I must arrange them, arrange the drill schedule and conduct the whole competition. When our present Grand Commander phoned me to tell me he had appointed me chairman of the Drill Com-

mittee of the Grand Commandery, he wound up by saying that it is in 1963. Immediately that three rang in my ears—63 and 83. I was born in 1883, and the thought ran in my mind, and I felt as though I should have told him, "Can a fellow be full of energy at 80 years of age?" I don't feel any particular slowing down yet, although I guess that it is coming. There is possibly one exception, my enthusiasm for new problems. I can't say that that enthusiasm and desire to tackle a problem is as strong as it used to be, although thank goodness there's some of it left. For instance, in Masonic work I used to just jump at the chance to go out and take part, but it is sure nice to sit back with the oldtimers and enjoy the meetings and enjoy the ritual and see work, etc., rather than take part in it. I guess that is the beginning of a slump in enthusiasm."

Last month Ruth and I visited Jo (Josephine) Ayer (Mrs. **John Ayer**) at her summer residence and farm in New Sharon, Maine. She seemed very well and vigorous and wanted to talk '05 plenty. She wished to be remembered to all '05 men (and women with whom she was so well acquainted long ago.) I was much interested in looking through a large catalog presentation of the sale of John's very extensive stamp collection. It was held in the rooms of a New York auctioneer, making a specialty in philatelic collections. It took two-and-a-half days to complete the sale, and the collection was so varied and unusual that "every scrap was sold" according to Jo. . . . I have an interesting letter from **Herb Bailey**, V, (Ontario, Calif.) and here again I must condense. "News! Not much from me this time as I have been a bit out of circulation for six months with ulcers and some trouble with garbage disposal facilities. The M.D.'s got their cut for X-rays, etc., but didn't think it necessary to cut me at this time. I'm about normal except that I have to keep on a restricted diet which I'm getting mighty tired of. Last week for the first time since before Christmas I tried my hands at making pots on the wheel and was glad to find that the arthritis had left me enough so I got along as well as could be expected after six months of no practice. I have been able to keep up my duties on the County School and Civil Service Boards and serve on a committee revising our county ordinance for civil service." . . . You will read these notes a few weeks before Christmas, but at this writing (October 16) I wish all '05 men, women, children, grandchildren, and great grandchildren a happy Christmas and a prosperous and healthy 1963.—**Fred W. Goldthwait**, Secretary and Treasurer, Box 32, Center Sandwich, N.H.; **Gilbert S. Tower**, Assistant Secretary and Treasurer, 35 North Main Street, Cohasset, Mass.

'06

Last month I reported the death on September 9 of **Abe Lampie** and shortly thereafter received a note from Mrs.

Lampie, to which I replied at length extending the sympathy of the class. **Abraham Lincoln Lampie**, I, was born in Boston October 3, 1884. He attended the Boston schools and entered with us but did not return senior year. After a few years with the Boston & Maine Railroad, Abe shifted to the B & A Office of Division Engineer and was at South Station until 1935. He was transferred to the Engineering Department at Springfield, before retiring in the early or middle '40s. When Abe wrote to me a couple years ago, reporting his change of address, he referred to his pleasant memories of our 50-year reunion and his hope of making the 55th, but he was not able to attend it. Survivors are Mrs. Lampie (Valetta R.), a son, William D. of Framingham, and two grandchildren. . . . Through a Chillicothe Gazette clipping came the report of the death in Asheville, N.C., on August 11 of **Henry Pope Carruth**, V, who was born March 25, 1884, in the Dorchester section of Boston. He entered Tech with our class; Henry was on the soph tug-of-war team and a member of the Chemical Society but did not return for junior year. He soon joined A. D. Little Company and was their representative for six years at the American Writing Paper Company in Holyoke, followed by three years as chief chemist for that company and manager of the testing department. In 1918 he joined the Mead Pulp and Paper Company in Chillicothe, Ohio, as assistant to Mr. Mead. "He was made general manager of operations in 1919 and a few years later a director, then in 1929 the executive vice-president and general manager of all its plants. He was with Mead until 1936; with the Brown Company (then in receivership) until '41, and became executive vice-president of Union Bag and Paper Company. He retired in 1947. His first wife, Letitia McManus, died while they lived in Chillicothe and he later married Leona Morris who survives him; he leaves six children. His recent address was that of a married daughter. Mrs. W. Henry Stone, in Kingsport, Tenn., to whom an expression of sympathy from the class has been sent.

The death of another classmate was reported to me in a round-about-way, from Oklahoma. (**Charles Terrell Bartlett**, I, died August 25 in a San Antonio hospital. Terrell was born July 26, 1885, in San Antonio, the son of Major General and Mrs. George T. Bartlett, which explains why his home address was Fortress Monroe while he was with us on Boylston Street after attending Phillips Exeter. During those four years and ever since, Terrell has been a dedicated '06 Tech man! While earning his degree he had time to be a member of Osiris; six clubs—Technology, Walker, Texas, Exeter (vice-president), Chess and Civic; the Civil Engineering Society; Tennis Association; associate editor, *Technique*, '06; managing editor and editor-in-chief of *The Tech*; on the Executive Committee and the Class Day Committee; while he probably also took an active part in the bull sessions at Tech Chambers. His thesis was "Tests to Determine the Tensile

Strength of Steel Angles," with **H. B. Orcutt**.

As the notice I received contained very little information I wrote his office for a verification of the date, etc., and am very grateful to his secretary for very complete and helpful information, including a 30-page booklet containing a "Summary of Professional Experience" of the Terrell Bartlett Engineers. That experience began in San Antonio in 1908 as a consulting engineer, the previous two years having been spent with the Pennsylvania Railroad on maintenance-of-way work and then with a New York Central Railroad subsidiary on tunnel construction. Around 1915 he was joined by Alfred G. Ranney, I, the firm name being then Bartlett & Ranney, Inc., with offices in the Moore Building. This partnership was dissolved by or before 1925 when the firm name became the Terrell Bartlett Engineers, Inc. In 1944 Terrell added a junior partner, A. M. Erskine, Texas A & M, '24, who had been with him since '24; and in 1936 M. W. Krause, '31, VI, SM, became a member of the staff. To list in detail all the projects that Terrell and his firm have been concerned with through nearly 55 years would indeed take a book, so I will quote. He "designed and supervised construction of 55 major bridges in South Texas, was consultant on the Frio River and LaPryor-Nueces Valley Irrigation and Elephant River Dam Projects, was an active associate engineer on the Medina Lake and Medina Diversion Dams, Hondo Air Base, and the Galveston Causeway, and the master plan used by San Antonio for city storm drainage." He served on the San Antonio Chamber of Commerce Water Resources Committee.

Terrell's memberships were numerous, too: registered professional engineer; life member ASCE and charter member and past-president of its Texas Section; AICE; life member American Water Works Association; charter member Kiwanis Club; Order of the Alamo since 1909; Texas Historical Society; San Antonio Country Club; Sons of the American Revolution; Torch Club; long-time director of Boysville and a past vice-president; and for 26 years M.I.T. honorary secretary in residence. Terrell had been a loyal, interested, and helpful classmate through the years and at our 50th and 55th reunions he was accompanied by his wife, Elizabeth Cassin, whom he married in 1910 and who survives him. He is also survived by Elizabeth's nephews and three of her nieces, two of whom Terrell brought up to Wellesley College some years ago and we met them that Alumni Day, as you perhaps recall. . . . With best wishes for a Happy Holiday season from Jim, Sherm and Bertha, Marion and me.—**Edward B. Rowe**, Secretary-Treasurer, 11 Cushing Road, Wellesley Hills 81, Mass.

'07

A nice note from **Ed Lee**, I, states that he has moved again. This is his fourth move since retiring to Florida. He is now

located on the Gulf of Mexico at Cap-tiva, Fla., P.O. Box 56 and hopes to remain there permanently. . . . An announcement has been received from **Sam Marx** stating that the Marx family has moved from Chicago and will be located at "The Westbury," Madison Avenue at 69th Street, New York 21, N.Y. Class members are requested to note these two address changes on the recently issued "Class List of Members."

I have noted several times that "**Tucky**" Noyes has a hobby of producing family coats of arms in color. He has recently completed one of these for me of the Bangs family, and it is a real work of art. Any members of the class interested in family genealogy should write to Tucky for information. . . . Your secretary and his wife took a month's vacation for the first time in our married life of nearly 53 years. It was a combined boat, rail, and bus trip through Canada and our northwestern states. The 2,000-mile journey on the Alaskan inland waterway from Vancouver, British Columbia, to Skagway, Alaska, and return, with stops at Prince Rupert, Ketchikan, Juneau, and Wrangell, was not only relaxing but most informative. Glacier National Park is a paradise for any photographer. We have several hundred feet of movie film and dozens of slides to keep us from forgetting the many breathtaking views of the Canadian Rockies and the Alaskan glaciers. . . . Plans are underway for a class dinner to be held at the Faculty Club on the evening of November 1, when President **Robbins** will tell us of his experiences in Europe this past summer.—**Philip B. Walker**, Secretary-Treasurer, 18 Summit Street, Whitinsville, Mass.; **Gardner S. Gould**, Assistant Secretary, 409 Highland Street, Newtonville, Mass.

'08

The following item from the Dayton Daily News will be of interest: "**Charlton D. Putnam**, who 24 years ago became the first director of the Dayton Metropolitan Housing Authority, will leave his post on April 30. Putnam, 75, said he plans to go into retirement: 'I would like some years now while I'm still in good health, for relaxation, to do as I please without major responsibilities,' said the man under whose directorship the authority grew from scratch to its present position as landlord for some 2,350 Dayton families. Andrew S. Iddings, Chairman of the authority, said 'We consider Mr. Putnam to be the greatest director of public housing in the United States.' Putnam, who lives with his wife at 5296 Grantland Drive, came to Dayton from Boston in 1911 as a young civil engineer hired by the National Cash Register Company to help lay out plans for Hills and Dales Park. Putnam later practiced civil engineering here, and from 1924 to 1935 was president of the Dayton Plan Board."

Jimmie and **Marie Burch** attended the A.B.A. Convention in Atlantic City the last week of September. . . . The New-

ark Evening News of July 27, had some news about Mayor **Harold S. Osborne** of Montclair, N.J. It reported: "It was 4:53 P.M. in Montclair, about 9:30 P.M. in Graz, Austria, yesterday when the mayors of the two towns picked up their phones to exchange greetings. Their informal chat might have passed unnoticed, except that their voices were being relayed through a shining sphere, an incredibly intricate maze of wires and transistors, orbiting more than 3,000 miles above our planet. . . . Montclair was the only community in New Jersey to participate in the special Telstar project in which representatives of 23 American cities spoke with their counterparts in 23 cities in 16 Western European nations. It was arranged by the United States Information Agency as part of America's 'People-to-People' undertaking.

"At 3:30 P.M. the office of Mayor Harold S. Osborne of Montclair was already tense. Five residents of the town were ready to play their roles in the drama created by Telstar. Every few minutes an official from the New Jersey Bell Telephone Company would check with the long distance operator in White Plains, N.Y., where a line was being held open to connect Montclair with Andover, Maine, where radar 'ears' listened for the satellite. In the darkness beyond the stratosphere, Telstar was nearing the zone in which the five-minute transoceanic contact could be made, its 151st pass through the midpoint. . . . On a wall behind Osborne's desk hung the flag of Graz, a black Hapsburg eagle on its green field. 'Hello . . . hello, Mayor Scherbaum,' Mayor Osborne began. It was Scherbaum's birthday and Osborne congratulated him on having such an exciting event to commemorate the day."

Raymond E. Drake, President of the Avon Sole Company, was featured in the first of a series of "Spoketraits" being published by the Enterprise and Times of Brockton, Mass. It mentioned that his company made the first fiber rubber sole in 1913, that he was in charge of the sole and heel code authority, War Production Board, in World War II, and he belongs to a long list of organizations, including the American Chemical Society and Paul Revere Lodge; he is also past-president of the University Club of Brockton. Wishing you all a Merry Christmas and a Happy New Year.—**H. Leston Carter**, Secretary, 14 Roslyn Road, Waban 68, Mass.; **Joseph W. Wattles**, 3d, Treasurer, 26 Bullard Road, Weston 93, Mass.

'09

With our 50th Reunion just a short memory away, it seems incredible that our 55th is only a little over a year away. On Alumni Day, **Molly Scharff**, XI, discussed the matter with several members of the class and urged that plans be started and a rendezvous be reserved right away. Accordingly, an ad hoc committee has been formed which has already investigated local hostels and made other tentative plans. More

specific information will appear in the January Review. . . . We have already reported that **Marcia Wallis** was in the hospital at the time of Alumni Day and could not attend as she usually does. We have talked with **George, II**, and he reports that she is now quite well and is able to get around. They are planning their annual winter visit to Florida and **George** has already arranged to have their apartment at Pompano Beach made ready for them. . . . **Lester King**, IV, sent **Francis Loud**, VI, a two-column clipping from the Walla Walla (Wash.) Union Bulletin with a headline "Ferguson Ends Long Career with Bank at End of August." It contained a picture of **Fergie (W. Craig)**, II, who retired on August 31, having served as vice-president, and trust officer and a director of the Baker-Boyer National Bank. He will continue as director. He was born in Adams, Mass., and became acquainted with Walla Walla through the late **Gene Hunt**, II, a fraternity brother, who obtained a position for him at the Gilbert Hunt Company, owned by the Hunt family. **Fergie** liked the city so well that he made it his permanent residence. In World War I he was commissioned a first lieutenant in the Army and saw duty in the Philippines, China, and Siberia. After the war he was appointed to the City Commission. In 1929 he resigned to become assistant trust officer at the Baker-Boyer National Bank and in 1948 he became vice-president and trust officer. A few days before he entered the Army he married the late Mildred Baker. We all remember seeing him at the 50th Reunion and the class wishes him a long and most happy retirement. He plans to travel, read, and "spoil his grandchildren."—**Chester L. Dawes**, Secretary, Pierce Hall, Harvard University, Cambridge 38, Mass.; **George E. Wallis**, Assistant Secretary, Wenham, Mass.; **Francis M. Loud**, Assistant Secretary, 351 Commercial Street, Weymouth 88, Mass.

'10

It is becoming more and more difficult to obtain news of classmates and if it were not for **Carroll Benton** there would be no notes this month. **Carroll's** news is not cheerful; his letter enclosed a clipping from The New York Herald Tribune of October 9 giving notice as follows: "**W. Clark Arkell**, 75, a director and executive committee chairman of Beech-Nut Life Savers, Inc., and a leading food executive for more than 40 years, died yesterday in his home, 185 E. Palisade Ave., Englewood, N.J. Mr. Arkell attended Taft School, Watertown, Conn., and was graduated from the Massachusetts Institute of Technology in 1910. The following year he joined the Beech-Nut Packing Co. of Canajoharie, N.Y., of which his father, Bartlett Arkell, was a founder. He became a director of the company in 1919, was its secretary from 1921 to 1930, a vice-president from 1924 to 1941 and president from 1941 to 1950. He was board chairman from 1954 until 1956 when the company merged with

Life Savers Corporation. He then became executive committee chairman, a position he held until his death. He also was president and director of the Arkell Safety Bag Co. Mr. Arkell served as a captain in the Army Ordnance Department during World War I. He was a member of the Union League Club and, until recently, a trustee of the Arkell Hall Foundation."—**Herbert S. Cleverdon**, Secretary, 120 Tremont Street, Boston, Mass.

'11

Aleck Yereance, I, of 110 Valley Court, Falls Church, Va., wrote in September: "The news of our move to Harwichport (July 1962 Review) was a misunderstanding, probably due to my not making it clear that the address, 27 Old Wharf Road, Harwichport, Mass., was only for the summer. We spend several months there each year, but count the Virginia address as our residence. Early this week I was at the commissary at Cameron Station (Alexandria, Va.) reaching for a box of sugar buns when I heard someone say 'Still have a sweet tooth, hey?' Looking around I found our classmate **Phil Kerr** beside me. He reports having had a good summer, and seemed very fit. Before leaving the Cape, Edna and I called at the **Gordon Wilkes** home in Orleans, where they were as chipper as usual. . . . **Norman Duffett**, X, went again in August from 909 James Avenue, Niagara Falls, N.Y., to 205 So. C Street, Lake Worth, Fla. He must own livable property at both locations, as he changes from one to the other during various seasons of the year. . . . A note from **Sallie Denison** said she had heard from **Jim Duffy**, who was in Russia with his son Jim, Jr. No further details. **Sallie's** daughter, Helen, was married July 26 to Robert Walker in Cornish, Maine. Robert's father, Phil, is the '07 class secretary. . . . Hope all of you will have a Merry Christmas.—**Henry F. Dolliver**, Secretary, 10 Bellevue Road, Belmont, 78, Mass.; **John A. Herlihy**, Assistant Secretary and Treasurer, 588 Riverside Avenue, Medford 55, Mass.

'12

Cy Springall is recovering wonderfully from the serious illness he experienced last winter. His trip to the Cape with us did not slow his recovery and in fact he feels he benefitted from seeing all his old friends. He would be delighted to hear from any of you at his 50 Park Street, Malden 48, Mass., address. . . . **John Noyes** passed through Boston last week on his way back to Texas. John and Caroline left almost immediately after the reunion for a European cruise and then spent several months touring Europe in a car. He reports having a fine time and is now on his way back to Texas, visiting his family en route.

Philip T. Redfern, who planned to be with us at Harwichport but was pre-

vented by sudden illness, passed away on August 7 at his Ravenna, Ohio, home. . . . **Charles O. Perrine** passed away at his home in Riverside, Calif., May 18, 1962. . . . **Clarence A. Stewart**, who has lived in Bristol, Vt., since retirement, passed away this spring. . . . **Ralph M. Torrey** passed away in July while vacationing at Nantucket. Ralph retired eight years ago as chemical division manager of Lummus Company of New York, which position he held for 15 years. During and after World War II, he served on the Referee Board of the Chemicals Branch of the Office of Production Research, and on the Advisory Board and Utilization of Surplus Industrial Facilities of the War Department in Washington. . . . **John D. Shore** passed away suddenly in September. John taught English for over 30 years at the English High School in Boston. Since then he has taught engineering at Northeastern University and at the Franklin Technical Institute.—**Frederick J. Shepard, Jr.**, Secretary, 31 Chestnut Street, Boston 8, Mass.; **John Noyes**, Assistant Secretary, 3326 Shore Crest Drive, Dallas 36, Texas.

'13

Is it too early to wish you a very Merry Christmas and a Happy New Year? Do you realize that six months from the time you read these notes you will be preparing to celebrate your 50th Reunion at Cambridge and Oyster Harbors Club? Well, our classmate, **George R. Wallace, Jr.**, received a four-page feature write-up in the Sunday edition of the Worcester Sunday Telegram last Spring. "For someone who majored in banjo at M.I.T., George R. Wallace, Jr., has done all right for himself. Wallace—a business executive, world traveler, philanthropist, chairman of the board of Fitchburg Paper Company, a man with a tremendous joy of living—has done all right by his native Fitchburg, the paper industry, and his company, too, impressing his peppery personality on all of them for a span of more than 40 years." George is listed merely as a member of the M.I.T. Class of '13, but he claims a different distinction: "Actually, I was the first member of the class to be kicked out. . . . They couldn't take me more than a year. But I did get in a lot of banjo practice." George has had a varied and diversified career as automobile racer, paper mill laborer, plant manager, company president, researcher, sales organizer, and presently chairman of the board. Along the line, he was a pioneer in air travel, and his company has its own professionally-piloted plane, besides a helicopter which makes many trips to Boston and near points, taking off and on, either from George's lawn or the roof of the ultra-modern office building. Of course, he is not the "rags to riches" type. He is the third Wallace to control the Fitchburg Paper Company, and has inherited the restless ability, political bent, and philanthropic desire to help not only his native city but the world in general. Since his advent as

president, the sales have gone from \$1 million in 1931 to \$20 million a year to date and should increase by another \$10 million in the next five years according to Junior. George has a show place in Fitchburg, known as Screwball Terrace, a former home, Cambridge Grant Farm, where he raises prize winning McIntosh apples, and "Phez-Hens"—a cross between pheasants and hens. This ambidextrous 72-year-young man also has added trick photography to his other hobbies—banjo, accordion and nowadays, electric piano playing. Our space does not allow us to enumerate further accomplishments. Great work, George. We shall expect you to give us further accounts of your activities at the 50th, together with those of your wife, who also leads a very busy life. **George Richter** (April Issue) has informed us that you will join him next June in a battle of music, a la banjo.

Bill Mattson still keeps us informed of his activities which are many. He still is interested in Massachusetts politics; he feels the Kennedys are already too plentiful in Washington now. Bill, with your fine feathered hand working as a Republican precinct chairman and Jo guiding the destinies of the charitable organizations in and around Denver, Colorado must be a desirable place to live. . . . The **Charlie Thompsons** enjoyed several weeks in Nova Scotia this past summer. Your chairman of the 50th Reunion has made several trips to the Institute during the past few months conferring with Don Severance, '38; Fred Lehmann, '51 and Chick Kane, '24, about a big celebration in June, 1963. You no doubt have received the reports from the organizations and leaders who have done an outstanding job on both the Second Century Fund and the annual Alumni Fund. 1913 was not among the higher group but we all must endeavor to show our winning colors in June, 1963. Let's go. . . . It was indeed a great honor for your President Charlie Thompson and your secretary to be the guests of the Institute for two days, September 7 and 8, 1962, at the Fourth Alumni Officers' Conference. The details of the several sessions, seminars, demonstrations, receptions, together with the social events, and the various sociable repasts were fully described in the main part of the November Review. All of these events were very inspiring and instructive. This hospitality of the Institute not only gives your officers an insight into the Tech of today, but also provides a compensation for past efforts and an incentive for future endeavors.

It has been very gratifying to the Officers of your class that already nearly 90 members have responded with the 1962-63 dues. Also, many have included letters, notes, and comments. This co-operation will assist your secretary in providing more and better notes for The Review. The various notes of praise and congratulations which many of you classmates have offered to your scribe were very flattering, but the credit for the compilation, publication, and distribution of the 1913 Class History should be given unreservedly to **Lester Gustin**.

It is our sad duty to announce the passing of a dear classmate, **Thomas R. Rey-**

burn. The last bill for dues sent to him was returned to us from the Marie De Villa Retirement Center, 13900 Clayton Road, Manchester, Mo., with the notation "Opened by mistake. Mr. Reyburn passed away over six months ago." If anyone will furnish us with the biographical details about our departed friend, we will gladly transmit the information to our membership. . . . **Jeanne and Jack Farwell** are now touring Europe again. Jack writes from the "Queen Elizabeth" and we quote in part: "Well, I don't believe my activities and programs would be too interesting to you intellectual gents, but here's a digest. I retired a couple of years ago, but for a while assisted on some special work. My main projects now are improving and maintaining 50 acres of land with miscellaneous buildings including a reconstructed Colonial which we rent. We constructed a wood and metal working shop, and our land improvements include clearing, grading, bulldozing, blasting—I operate my own chain saws, Ford tractor with blades-rake, etc., with five foot rotary mower—with which I have now reached maximum output in mowing several acres. Top project on return, layout, clearing and constructing a pond—and right amid all this, Jeanne says 'No more sales talk and resistance to a trip around Europe', so here we go." Wonderful, Jeanne and Jack. Have an interesting trip and give us a resumé of everything you two do; that is, most everything.

Again, we are bearers of sad news and we quote from a letter lately received "I am sorry to inform you that Mr. **C. Harold Hopkins**, of 1707 E. Bay Avenue, Balboa, Calif., Class of '13, passed away on June 17 this year at Santa Ana, Calif. Signed Vera M. Alt, Secretary." We have written this secretary for more detailed information. . . . A very appreciative letter was received from **C. Preble Wetherbee**, and we quote in part: "I would like to be one of the first to congratulate Lester Gustin on his 'production' of the 1913 Class History. I think his whole set-up captures the atmosphere of the times which he hoped it would do. I can appreciate the man-hours he spent in this project, and I think he did a superb job." C.P. was amazed at the number who have passed away, just as we were. "But it certainly makes one stop and think." He also suggested that we send a copy of the Class History to **Joe Summerville's** widow. Gus has taken care of this request. . . . Mrs. **Lois Darling** wrote a very appreciative note acknowledging our letter of sympathy regarding our memories and sad feelings which we had for **George**. He was still active in architecture and had planned to retire next March to enjoy his hobbies. "It means much to hear from one of George's friend's. Thank you. Very sincerely, Lois Darling." Fred Lehmann, Alumni Association Secretary, sent us a copy of a letter to Lester congratulating him for his outstanding accomplishment in connection with the 1913 Class History. Quoting in part: "Your class history will be a wonderful example for others to follow in the future." . . . Again, we must report with a heavy heart the

passing of another classmate and correspondent, **Clarence S. Roe**. Our class dues bill was returned with this notation, "Clarence S. Roe died April 16, 1962." We have asked Clarence's family for more detailed information so we may all pay tribute to our old friend.

A very interesting letter has been received from **Fred Stillman**. We quote in part; "Lester Gustin did fine work on the Class History. It brought back to memory things I have not thought about for a long time. President Kennedy has indeed done much for his country but on the other hand, his country has done many million times for him as for most of us." Fred realizes that M.I.T. provided an adequate course in metallurgy, but when he graduated nearly all of the good positions were filled by non-technical men, so that technical men in his field had difficulty in obtaining their just deserts. These conditions prevailed through two wars and the depressions, until he was forced to take an early retirement to survive on a meagre pension. So, 10 years ago, he entered the television and radio service, which he seems to enjoy and hopes to continue for many years to come. Of course, Fred is worried over the present world and particularly on the home front, or should we say frontier. We agree that with the large sums being appropriated for the many foreign and domestic programs, and with the steady increase in taxes, the outlook for many of our retirees is anything but bright. Well, Fred, cheer up, we came into this world without anything and probably that is the way we shall go out. . . . Several class histories and letters recently sent out from the Alumni Office and our officers have been returned with the notation "Moved, address unknown." Can you help with the following: **T. H. Mace, Jr.**, 608 Grosvenor Avenue, Montreal-6 P.Q. Canada; **Harold B. Beebe**, 27 Everett Avenue Winchester, Mass.; **Charles J. McCarthy**, 92 Renshaw Avenue, East Orange, N.J.; **John W. S. Brady**, 4615 North Missouri Ave., Portland 17, Ore. So until 1963, keep planning on the 50th Reunion of M.I.T. Class of '13 June 7-10, 1963.—**George Philip Capen**, Secretary and Treasurer, 60 Everett Street, Canton, Mass.

'14

Today's mail brought your secretary a brief note from **Hibbard S. Busby** of Springfield, Mass., enclosing a clipping and sketch from the local paper entitled "Historical Sketch of Elsie Janis." It was hard for me to believe, as it must have been for Hib, that she was our 'class guest' during the freshman-sophomore football contest and was then playing a leading role in a piece at the Colonial Theatre. Those who remember her charm will recall how well she entertained and kept under control a not-too-quiet audience. It was only when I had checked her published birth and death dates that I realized too that most of us have already reached three score and ten.

Which brings us up to saying that the

arrangements for our 50th Reunion in 1964 must be made soon. **Charlie Fiske** has it in mind, and your secretary discussed it with him via long distance to Maine just recently. One of the difficulties is that so many of our classmates have moved away to warmer spots, at least during the long winter season. Fortunately, however, some of us expect to be on hand near Boston during that spring. Charlie will be South by the time these notes are published, but your secretary expects to be right here now until early summer, after having spent most of the past two months in the Mediterranean, mostly Turkey.—**H. B. Richmond**, Secretary, 100 Memorial Drive, Cambridge 42, Mass.; **Charles P. Fiske**, Cold Spring Farm, Bath, Maine; Assistant Secretary and Class Agent, **Herman A. Affel**, RFD 2, Oakland, Maine.

'15

To all classmates and your families—a happy holiday season with all the best for good health and good cheer in the New Year. . . . Following some surgery in the middle of September, **Bur Swain** has made a quick and strong recovery and is now well on his way toward the gay and bouncing guy he formerly was. Our best to Bur. . . . In September, at the Alumni Officers' Conference, **Ralph Curtis**, Springfield; **Gardner Wilson**, Mountville Pa.; **Max Woythaler** and I represented our class. **Clive Lacy** was laid up; **Ben Neal** was away and **George Rooney** was busy, so they could not attend. It was an inspiring and elevating meeting and gave us all a feeling of warm pride in being a part of our great and famous M.I.T. At a lunch, we had the pleasure of sitting with two remarkable older Alumni: **W. Channing Brown**, '91, and **Charlie C. Smith**, '00. . . . **Warren Cowles** took a short course at M.I.T. in computers and data processing—sounds awfully advanced for a retiree. While in Cambridge, he and Mrs. Cowles had dinner and an evening with **Al** and **Anne Sampson** from Beverly and later the Cowles took **Barbara Thomas** to dinner at the M.I.T. Faculty Club. **Barbara** enjoyed their charming company. The Cowles' son recently was awarded his doctor of electrical engineering degree from Yale. . . . I talk often with **Thayer MacBride** who is lazily enjoying his retirement in Cohasset, Mass. . . . This summer, when in Boston from Philadelphia, **Ed Whiting** visited with **Archie Morrison**. He said he was gradually adjusting himself to the let-down of retirement.

Philip L. Rhodes, XIII, '19, designer of the America's Cup defender "Weatherly," was once a student under **Evers Burtner**. Evers takes personal pride in Rhode's work in designing this winning boat. . . . **Sol Schneider** wrote that his wife, **Ann**, is much better and is trying hard to regain weight lost during her hospitalization. He planned to see **Herb** and **Alice Anderson** when they returned from their Mediterranean cruise. **Sol** expects to be with us at the Annual Class

Dinner in January in New York; good for him. . . . One pretty summer day, **Fran** and I had lunch and a delightful visit with **Jim** and **Lena Tobey** in Newtown, Conn. After visiting their daughter and four grandsons in Maine, they returned for **Jim** to give his lecture courses at Yale before they left for West Palm Beach for the winter. What a life; I can't feel too sorry for **Jim**! . . . The annual report of the 1962 Alumni Fund shows 1915 well up to the top in all areas with 41 per cent of the class contributing (average of all classes was 26 per cent). The average contribution was \$82 as compared with the average of all classes, \$39. So many thanks to our 102 classmates who gave and credit to **Max**, **The Pirate**, **Clive** and **Ben Neal** for their relentless and indefatigable efforts for our class. Keep up your good work. . . . While campaigning for Congressman **Perkins Bass** in Peterboro, N.H., **Carl Wood** was parade marshal during a big rally there and rode ahead of the large line of colorful vehicles on horseback, attired in formal riding gear. Well, the candidate won, and we hope **Pop's** hoss won, too. **Pop** had written me a funny note: "How is the globe trotting class secretary? I think we should have the class treasury audited because every time I give a check to 'help Azel,' a trip abroad for **Azel** soon follows." Ah, me!

In the June, September and October issue of "Health," **Jim Tobey** has some learned articles on Vitamins B, B¹ and C. . . . I had a delightful visit with **Harry M. Wylde**, X, '14, and his wife in their attractive old house in Southboro, Mass., to which **Harry** retired a few years ago, after a long career with **Lever Brothers**, as technical director. On the West Coast they have a daughter and one grandchild. **Harry** and I had a nostalgic time reminiscing about our experiences in 1915-1916 at **Parry Sound**, Ontario, where he, **Ben Lapp**, **Reg Pollard**, **Frank Surls**, **Ray Walcott** and I were very immature and inexperienced young plant chemists and engineers for **Canadian Explosives, Ltd.**, making cordite for 3 inch shells and blasting dynamite. Looking back, we both shuddered. "Danger unknown is danger unfear'd" (I guess). . . . As a richly deserved reward for his monumental work in setting up our Annual Class Cocktail party as such an outstandingly successful and enjoyable event, **Al Sampson** has been appointed to the Class Executive Committee. I know we can profit by **Al's** profound and sagacious advice and help and be cheered by his inimitable "down Maine" humor. Welcome aboard, **Al**! From the 112 reply cards **Al** received in June, we have some extensive and interesting Class News. **Al Abrams**: "I am still with **Arthur D. Little, Inc.**, in the pulp and paper industry. I have five grandchildren and marvel at the productivity of the present generation." . . . **Phil Alger** was in **Denver** and **Estes Park** preparatory to settling at his summer place in **Rumney, N.H.** . . . **Herb Anderson** just couldn't make it for Alumni Day. . . . **Bridge Casselman** was recovering from a recent heart attack while fishing at **Cape Hatteras**. . . . **Ludwig Bengtson** is still practicing archi-

lecture in Charleston, W. Va., and does not want to stop. He has four grandchildren. . . . **Francis Boynton** felt Pasadena was a little too far away but sent his best to us for a happy day. . . . **Ken Boynton**: "I am really sorry that we shall not be able to attend this year's Cocktail Party. Helen and I expect to start for the West Coast in a few days with the Seattle Exposition as an objective. It's a long drive, and I hope we shall find the trip worthwhile. We also plan a cruise next winter on the Rotterdam which will, I fear, be our last. Best regards to all."

Alfred Coleman left in May for a trip to Europe and England. He has been retired for four years and likes it much better than working (don't we all?). He has two-and-a-half grandchildren. . . . **Orton Camp** was at his 50th Reunion at Yale, Class of 1912. . . . **Harvey Daniels**: "We have just arrived here in Minnesota for the summer and will be going back to our home in Delray Beach, Fla., about the end of October. We are enjoying being with our grandchildren, but one of our young families with three grandchildren is off to Australia in a few days where my son is representing the Honeywell interests. . . . **Carl Dunn**, Chicago: "Will be with you in spirit, too far to go for any party, even a Class of '15 party. We have not been traveling much of late due, I guess, to the fact that we have done more than a fair share in past years. The urge is gone to see how others live. The best of it is right here." . . . **George Easter**, Buffalo: "I have finally reached the semi-retired stage but seem to have too much to do to let me wander down for the party. I really did get to Boston this spring for two hours though, so I'm improving. Best regards to anyone who remembers me." . . . **Carlton Eddy** retired in May and is now living at 121 South Street, Harwichport, Mass.

Excerpts from our nomadic **Ernie Loveland's** letters from Lerida, Spain and Konje, Yugoslavia, show his continued interest and activity in fishing and motoring. What a life; but those Spanish-French translations and the Spanish Scramble game are too much for us: "You sure are living it up! I never expect to catch up with you on your trips. The nearest I came to the South Pacific was accepting a job with a newly formed company in Tasmania as vice-president in charge of production, but never got going. I have a vague idea of fishing in Finland, Sweden, and Norway in 1964. I had thought of driving up there but when I look at the map I find East Germany in the way. Last Christmas and New Years I spent in Casablanca and saw the 'French divorcee' but didn't spend much time with her. In answer to your question, she hasn't yet said 'oui,' which bothers me not at all. While I was in La Cordina I attended a French class. My homework was translating Spanish stories into French. I found that I could go directly from Spanish to French and vice-versa without touching English. Here, after fishing morning and afternoon, I have supper and then a Spanish friend comes in to play scramble with me. So far I have won more than half the

games. The trip up here to Lerida from La Corina was beautiful. When there is a choice, I usually take the secondary roads instead of the main highways and see the countryside, the peasants in wooden shoes leading oxen pulling loads on axle-squeaking carts, and a lot of sheep, goats, and donkeys. I don't travel like an American tourist but like a native European; I drove from La Corina to Bilbao along the north shore of Spain and then moved inland to cross the Pyrenees over one of the high mountain passes into France. The north shore is beautiful with the mountains coming right down into the sea. One morning I drove over a pass between Jaca, Spain, and Pau, France, high enough so that there were big patches of snow below me." From here on Ernie describes some perilous, hazardous driving over and through the Pyrenees above the snow, in and out of many small mountain towns. Altogether, an exciting and picturesque trip. He expects to be home in a couple of years. He said that the grades are so steep on the hairpin bends that even in first gear to prevent his motor stalling he had to rush the curves with his headlights pointing out over the abyss with the road hairpinning in the other direction. It was a good thing for him that he had become accustomed to mountain driving on those horrible, loose-gravel roads. . . . Again, happy holidays to you all!—**Azel W. Mack**, Secretary, 100 Memorial Drive, Cambridge 42, Mass.

'16

Now that we've started to forget the 46th Reunion, we are beginning to feel the approach of the 47th, to be held at the Oyster Harbors Club in Osterville. **Ralph Fletcher**, our busy, ski-minded President urges everyone to hold open the dates, June 7, 8, and 9, for the 47th. Among other things we believe the **Emory Kemps'** promise of a year ago, to attend the 47th from Sarasota, Fla., is still good, and several others who missed last year have made on-paper avowals for our next! . . . Here's something for the record! We have two fine pictures to mount on next June's reunion bulletin board. Both represent events in Louisiana, so you have no difficulty in guessing they show our own **Vert Young**. One picture, from the Bogalusa, La., Daily News of August 15, shows Vert as "Chamber President" with the caption: "Vertrees Young yesterday was elected president of the Bogalusa Chamber of Commerce at a meeting of the board of directors. The retired resident manager of the Gaylord Container Corporation had been serving as first vice-president following the resignation of Jesse H. Cutrer, Jr., who left office to successfully run for mayor of Bogalusa." The other picture, published June 30 in New Orleans, relates to a story entitled "Powerful Team Organizes to Tackle Problems of State," and shows "Officers elected by the Council for a Better Louisiana," including Vert Young as vice-president. The pur-

pose of the newly organized council "will seek, through research, planning, and public support, to marshal the state's resources, both human and material, in a comprehensive improvement-development program for the state as a whole to make Louisiana a state that is dynamic." Congratulations to Vert in his fourth year of so-called retirement, and congratulations to those who chose him. He is also noted for his wild-game hunting and rock-hounding; he and Sylvia are planning to go to Africa again in the spring but this time mostly on a geological tour. For the record both here and in Louisiana, we note that these new activities must not be allowed to interfere with the Youngs' attendance at the next reunion, and the next, and the next!

Allen Pettee writes that his two-and-one-half year Venezuela interlude is over and that he has returned to his retirement headquarters in Tryon, N.C. He feels that he folded up his tent in South America and stole away at about the right time; he was able to leave a well-seasoned replacement, an engineer who used to be with him at General Cable. For two months last spring, he and Mrs. Pettee had an extensive European tour, and cruising about in the Aegean Islands apparently stands out in their minds. He notes that the Greeks have done much to make their historical structures and archeology accessible and intelligible to tourists. Hotel accommodations are good, "and where climbing may be too severe for elderly people, donkeys or taxis are provided. . . . At Delphi, perhaps the high spot for us, we had new Quality Court style accommodations in a room six floors down on the side of what was almost a precipice of Mt. Parnassus, with a gorgeous view of a deep valley supporting over a million (so they say) olive trees." Allen emphasizes: "The five-day cruise to Greek islands of historical importance was something to remember. As the old lady said: 'Don't miss it if you can! The ship, food, and cruise guides were excellent.' The two-months traveling was enough for once, and Allen writes: "We were glad to get back to our own vine and fig tree." He had been busy ever since "pruning back the violent growth of the last two and one-half years." So, for information on what to do in Greece, or if you are going to the Smokies sometime, remember Allen is right there with a welcome in Tryon, N.C.

George Petit and his Trend Analysis were in for a complete double-column of comment in Bill Lee's "With Malice Toward None" sports column of the July 23 issue of the Hartford Courant. George has recommended that consideration be given to a proposed improvement in reporting the statistics of baseball club standings. To provide a measure of trend, he would include a momentum-index column to show whether a club is in a rally or a slump over the long term. We might note that this principle is embodied in certain techniques used in modern statistical quality control—something to show the dynamics of an underlying manufacturing process, not merely the individual bits of information obtained on a lot-by-lot basis. Are we thinking

alike, George? Pioneering, no? . . . **Francis Stern** notes in September or maybe October, that he has written to **Jim Evans** four times and is now writing a fifth time in order to keep him "pepped up."

We have two clippings about **Van Bush**. The first tells of a patent received for his process of forming a very strong glass sheet, "made by blowing glass until it is exceedingly thin, then shattering it. The fragments are collected in layers of the needed depth on a flat surface and a plastic poured over them to hold them together. The result is an 'exceedingly strong' structure . . . Dr. Bush told Science Service that his method was under investigation by the U. S. Ordnance Corps." The other clipping is about Van as a Cape Cod personality, an article by Frank Falucci entitled: "Scientist's Problems: Rabbits, Pond, Boat." As noted in the article, "Bush's achievements take up 6½ inches in Who's Who . . ." but when on Cape Cod "he leads the Cape way of life and his most perplexing problems this week were a cranky, back-firing boat engine, rabbits in the garden, and an algae-infected lily pond. A wizard in administration and electrical engineering with offices in the Massachusetts Institute of Technology, he still finds time to ponder over the travels and migrations of the common frog." He "observed he didn't like to go to Washington any more than he had to. He prefers the white shingle cottage with the red roof on South Dennis Road and the company of his wife, Phoebe." . . . **Steve Berke** indicated at the end of September that he and Louise expected to try Scottsdale, Ariz., in November and December, and if it gives Louise the relief the specialist thinks it will, they might even settle down there. Steve probably has been checking to see if there are one-stop jet flights from Phoenix to Boston at reunion times.

Our fast-becoming-famous world correspondent, **Irv McDaniel** and his wife, Kay, have returned to their haven in Spain after a "wonderful trip" from New Orleans on the freighter "Teneriffa" with stops at Baton Rouge, Tampa, Jacksonville, Le Havre, Dunkirk, and Antwerp. Irv speaks of a sad experience in Antwerp where they were showing their shipmates (two couples: M.I.T., '13, and a Delt from Wisconsin, '19) how to get along in Europe. "We went to a sidewalk cafe and I said in my best French: 'deux omelettes fromage.' Our shipmates looked at me in great admiration. The waiter brought us six ham sandwiches! As a result, we left the ship at our next stop (Rotterdam) and took the train to Hamburg." While waiting for their new Mercedes there, they borrowed a car and "made one of the most wonderful trips we have ever made. Put this in your book and make it at your first opportunity. You will see an old Germany that you never knew existed. This country is all east of Hanover and you also see a part of East Germany which is pathetic. So far this has been the highlight of our trip. (Anyone who wants the itinerary, let the class secretary know and he will send details. It includes Braunlage, Bad

Harzburg, Goslar, Luneberg, Lubeck, and Kiel.) Irv expands on his new Mercedes, tells just how he went about getting it, faster, and at a saving. As for Holland, we quote Irv: "We zizzed and zazzed all over Holland and really saw the place. It was very interesting but I had expected more. We started at Groningen and every five miles we would hit a village or city. We went to Dokkum, Sneek, Bolsward, even to far-away Urk which is one of the few 'costume towns' left. Then to Harlingen, which is a noted port and has a famous statue. If you walk around this statue three or four times you will get a little baby brother or a little baby sister. I didn't do it as I don't think my mother should be burdened with a small baby—diapers and all." And again: "This will be hard to believe, but . . . We were sound asleep in the Hotel Lion d'Or in Haarlem when our phone rang. The police wanted to see me, so I got dressed and went below. Police: 'Do you own a new grey Mercedes?! IBM: 'Yes.' Police: 'Do you know you bought a stolen car?' IBM: 'Impossible! I know better.' Police: 'We have checked and it is a stolen car.' IBM: 'I ordered it in the U.S.A. I know the people I bought it from, and I have all the papers including the German Government registry.' Police: 'But we know it was stolen because we have your car and the thief.' Yes, I had purchased a stolen car. A thief had stolen it out of the garage I had left it in and the garage didn't know it was gone. It would take pages to tell this who-dun-it—how they discovered it was missing, and how, in five minutes, had picked it up near Amsterdam. Before we left Holland the thief had started his two-year sentence. They don't fool around over here." . . . It is hard to decide what parts of Irv's letters to omit; here's one to include: "We saw all the sights of the old city of Amsterdam and were impressed. We spent a good half day in the Rijksmuseum which is famous for Rembrandt's (1606-1669) 'The Night Watch,' also an excellent collection of his other work. I always thought of him as heavy shadows and high lights. Not at all! After World War II, they cleaned up his masterpiece, removed 20 coats of varnish, and now it is a daylight scene. But my favorite artist of this era is Frans Hals of Haarlem." Irv speaks of their day in Ghent as one of the most memorable in their lives: "Ghent is to Flanders what Florence is to Italy. There is so much to do and see there. Just to describe St. Bavo's Cathedral and its contents would require pages and pages. Its greatest treasure is the big triptych which should really be called polytych, 'Adoration of the Lamb' by the Van Eycks. It is way superior to what we expected; we think it is one of the world's gems!" When in Paris, Irv notes: "Kay says the shops have Nothing to offer. Styles are about the same as last year. Kay has now been gone almost three hours, I am afraid, I am afraid she has found something!" And finally in Spain: "We are so glad to be here. The parties started before we could even unpack. Everyone seems to glad to see us back, even 'the little

people.'" We'll hear more from Irv, and in the mean time, we have a very special tabulation of his: "A Quick Guide through Flanders Museums."

Bob Burnap continues his part-time consulting with headquarters at home in East Orange, N.J. He recently forwarded a Newark Evening News clipping with an item about a new management consulting service—University-Industry Associates. The new firm has an advisory board comprised of educators from nearby universities and executives from industries and business in the area. Included on the board is **Earl Mellen**, retired president of Weston Electrical Instruments Company . . . In late August **Harold Gray** wrote that on September 1 he and Mrs. Gray were starting off for a 10-week trip by plane around the world. He wrote: "We start off in Vienna and go to Delhi, Ceylon, Bangkok, Hong Kong, Japan, Honolulu, and home. I read with a great deal of interest Irv McDaniel's description of Ceylon in the Class News, and I am looking forward to seeing some of the places he described, although we are not going to take anywhere near as intensive a trip in Ceylon as the one he took. Maybe I'll have something to tell you when I get back." . . . **Howard Hands** in September wrote of being on his customary three-summer-months stay in the North. Wrote: "Had our usual trip up to the White Mountains and it's still beautiful country—such a contrast to flat Florida. But I still like Florida for eight or nine months of the year. The other months are hot, and I mean hot! This summer was the hottest in many years, whereas up here it has been quite cool. It's a nice arrangement—nine months there and three months here." He sent a snapshot of a group of youngsters including the two of us, taken in his Lowell home eons ago and says: "one looks like Bob Burnap but what's he doing in a group of Lowellites?" Sure enough, it is Bob, but we have no answer to what's-he-doing.

And speaking of Florida, a letter from **Theodore Bulifant** sends his new address, 101 Prospect Avenue, Hackensack, N.J. with the note: "Florida was too hot for my wife and me, so we are glad to be back North again among friends and relatives." . . . Back in May, **Emory Kemp** wrote most enthusiastically of Sarasota, Fla., where he emigrated from Wellfleet on the Cape in January. He moved into his newly built home in March (address: 4022 Winthrop Street). As he wrote they had just then had their first rain since April: "52 days of clear sunshine every day without a drop of rain," but from June 1 to September, they should "according to the natives get thunder showers and downpours every day." Emory gets up early, between 5:30 and 6:30 A.M., works until 9:30 or 10:00 and then quits for the day. He took care of grading and landscaping his new place, planted two Brazilian pepper trees and one gold tree, and was in the process of adding a Cuban laurel, a cacao palm, a bottle bush, two crotons, two oranges, a grapefruit and a lemon tree. With breezes from Lake Pelican bordering their backyard, things are comfortable and Emory sounds

as though they were thoroughly enjoying their new home. We should see them on the Cape in June!

Reports are good on our two summer heart cases. Already (October 10) we have had a letter from **Bill Barrett**, postmarked New York (Metropolitan Life Insurance Company), and at the end of September **Jim Evans** had his first out-of-the-house luncheon in Fair Lawn with your secretary and wife. In a letter to Ralph Fletcher, Bill says **Bob Wilson** has given him the recipe for his ability to do so much after his own illness. And Jim was planning his first-since-summer attendance at a New York 1916 luncheon on November 8. Jim, who sends out notices for the New York luncheons, predicted that a better-than-average attendance may be expected because a number of the boys were wondering what he looks like with his weight reduced down to the 150-160 range. On the telephone he sounds bouncy again but he is not able to resume substitute teaching in Paterson High School yet. Both Jim and Bill want to express their hearty thanks for the many letters and cards they received. Jim reports word from several '16ers. **Bob Crosby** regretted Jim's need for a horizontal reunion ("hard to believe you were sober") and a longer horizontal hospital stay in August. The Crosbys went "down" to Bar Harbor from Marblehead during the summer to visit their daughter and now a grandson "which of course is an added attraction." Bob also went on two fishing expeditions to New Brunswick, Canada. Jim reports **Arvin Page** has not been able to enjoy (?) full retirement yet for he has been working half to two-thirds time ever since they returned from the West. And **Phil Baker** wrote Jim that he expected, "as a so-called honorary secretary for entering students here at a certain high school," to accept M.I.T.'s invitation to be its guest in September for a couple of days. Jim notes that the **Cy Guethings** spent eight weeks this summer in Pointe au Basil in Georgian Bay where "the fishing was good, the apartment cozy, and all the social life that we cared for."

Since mid-September **Harold Mills** has been laid up with a slipped disc, but we are glad to report some progress as of October 10. . . . **Duncan Fowler** indicated he could sympathize with Harold for he had just "had a horizontal experience myself and spent most of July in the hospital instead of swimming and playing golf. It wasn't a very serious operation, and I'm feeling fine again except that my legs are not in any hurry to get back into 'full speed' without letting me know about it." . . . **Obie Pyle**, who retired last spring, couldn't stand the idleness any longer and about the first of October became a manufacturer's representative handling three types of heat controls. He had occasion to visit with Ralph Fletcher in September, and also his latest grandson in Westford. Obie has long sought an excuse to attend one of the monthly class luncheons in New York. Now, with this new job, perhaps he has found one! These are held at noon on the Thursday following the first Monday of each month in the M.I.T.

Club of New York rooms in the Biltmore Hotel. Only **Len Stone** and your secretary were present at the October luncheon, but with good '17 company: Dix Proctor, Dick Lowengard, and Joe Littlefield. The next luncheons are on December 6, January 10, February 7.

We are very sorry to report the death of **Steve (Harold O.) Whitney** on September 27 in the New England Deaconess Hospital after a long illness. Steve was at the 46th Reunion in June and was not too well then, but, as Len Stone says, Steve, through his trouble in recent months, "was a most courageous guy." The Boston Herald of September 28 notes: "The Whitney Home, 'The Elms' at 249 Main Street, Watertown, stands where his ancestors first settled. The family also founded the Hollingsworth and Whitney Company nearby on the Charles River. He was educated at the Stone School and M.I.T. and was a member of the University Club and the M.I.T. Club of New York." . . . We regret, too, to report that **Jack Hickey** of Belmont, Mass., died late in August. Jack had been a meat broker for the past 30 years, and was the owner and president of John J. Hickey Company of Boston. Only last year, Jack was saying that the last of his eight children was the only one still in college, and he would soon have the satisfaction of saying that all eight had graduated from college. . . . We also are sorry to report the death of **Tom Jewett** of Chicopee Falls on September 8 in the Holyoke Soldiers Home. The Springfield News reports: "A veteran of World War I, he was employed as a civil engineer, and in later years, prior to his illness was employed by the Massachusetts Turnpike Authority. He leaves two daughters, Mrs. John J. Sullivan of Marion and Mrs. Robert Coulter of Capitole, Calif., and five grandchildren."

We heard somewhere, oh yes, from Jim Evans, that early in October **Dave Patten** was then just off for a bit of bird-shooting in Maine and Canada—Filsforth, Maine, was it? . . . And now to close the column for the current month. We have letters from Henry Shepard, Ted Strieby, Dan Comiskey, '17, and Jack Burbank to report in the next month's column. Many thanks to those who answered our calls for a few lines; this makes our job easy and interesting. To all members of the class, the best wishes of your class officers for a Merry Christmas and a healthful New Year.—**Harold F. Dodge**, Secretary, 96 Briarcliff Road, Mountain Lakes, N.J.

'17

Vacations are over, the fall foliage has reached its color peak in New England, and by the time you read these notes the snow may be flying. Here's a Christmas and New Year's greeting from your class officers. . . . The Fourth Alumni Officers' Conference at M.I.T. on September 7 and 8 for class officers, regional representatives of the Alumni Association, Class Agents, and Club Officers, brought together the following 1917'ers: Ray

Brooks, Stan Dunning, Dean Parker, Al Lunn, Bill Dennen, Francis E. Thomas, and your secretary. Those present were brought up to date on alumni affairs, and the ways by which class, club, and Alumni in general can assist the work of the Institute and the Alumni Association. . . . The envelope containing the Class Reunion News Bulletin, which you received in October, also included a letter from President **Al Lunn** asking for contributions to our class working fund, and a questionnaire. The latter will help fill this column with class news of interest to all.

Two news items have come to hand; the first about **Barney Dodge** as follows: "A leading chemical engineer said new sources of energy must be used before salt water can be economically converted into fresh water for irrigation. The most promising of these potential new sources of energy for use in desalination is nuclear fission, said Dr. Barnet F. Dodge, Dean of Yale's Chemical Engineering Department. Addressing a desalination forum during the weekend at Trinity College, (Hartford). Dr. Dodge said it would require two and one-half times the electrical energy now available and all of the world's existing fossil fuel supplied to produce adequate fresh water supplies by desalination in 1980." . . . The second news item concerns ex-class president **Ray Stevens**. "Arthur D. Little, Inc. has announced that Lieutenant General James M. Gavin will resume his duties as president and chief executive officer. General Gavin left the company early in 1961 to become United States Ambassador to France. He retired from the Army in March, 1958. Raymond Stevens, who retired as president in 1960 and headed the company again when General Gavin was appointed Ambassador, now will become chairman of the concern."—**W. I. McNeill**, Secretary, 107 Wood Pond Road, West Hartford 7, Conn.; **C. D. Proctor**, Assistant Secretary, P.O. Box 336, Lincoln Park, N.J.

'18

The complexity of human motivations contributes generously to the vast riddle and confusion of any man's life. Somebody else is always monkeying with the stops whenever any one of us tries to play the organ; or even neglecting to pump the bellows so that no sound comes forth when the keys are depressed. A class secretary has four sources of making music for this particular organ: letters, newspaper clippings, telephone conversations, and face to face contacts. Courtesy of the Alumni Office, class secretaries are furnished with changes of address, courtesy of The Review they are sent newspaper clippings. The other two possibilities sometimes leave one feeling warm and wonderful. They also sometimes emphasize the fate of the sensitive in a world of irrational responses.

By any standard that makes sense, the brethren would occasionally volunteer what news they had to offer instead of somehow feeling that inclusion in the

Class News is an invitation affair. Despite this, every class secretary contributes time, energy, and postage asking for news. In preparation for these notes, written on Columbus Day, I wrote four letters, no one of which was answered. No newspaper clippings, no chance meetings, and certainly no toll calls. However, amid the glory of autumn foliage, before nature goes back to bed for the winter—Merry Christmas!—**F. Alexander Magoon**, Secretary, Jaffrey Center, N. H.

'19

We have received the program of a testimonial dinner given for **Don Kitchin** on August 23 to celebrate his retirement from the Simplex Wire and Cable Company. A quotation on the program reads "To Donald Wentworth Kitchin—Age cannot wither him, nor custom stale his infinite variety; lesser men falter at each new milestone passed, but he marches on with quickened zeal to frontiers still undreamed." A member of many technical societies, Don has many scientific achievements to his credit. They include such things as studies of failures of paper cable caused by gassing and "waxing" of compound; development of a new method of patching and jointing cables by use of radiant heat; development with O. S. Pratt of methods and equipment for jointing submarine polyethylene telephone cable, starting with the Havana Cable; and development of test methods contributing to Simplex polyethylene insulation having twice the breakdown strength of commercial polyethylene. The Kitchin's three sons, Donald, Jr., Charles and Robert, attended the dinner. . . . **Bernard S. Coleman** has been honored by the Women's Committee of the Community Chest of Los Angeles with a gold feather award "for his long service on important budget review committees of the Community Chest, and for his interest in those services which directly touch, help and renew the lives of men, women and children."

We have received notice of the death of **Herbert W. Barrett**, 25 Avalon Road, Waban, Mass., on August 26, 1962. . . . Changes of address include: **Nelson A. Bond**; new address, 2712 Wisconsin Ave., N.W., Washington 7, D.C.; and **Louis J. Brown**, from Milford, N.H. to 284 School Street Northboro, Mass. . . . The secretary's daughter, **Connie**, married **George M. Beardsley** from California and they are now at Chapel Hill, N.C., with the university there.—**Eugene R. Smoley**, Secretary, 30 School Lane, Scarsdale, N.Y.

'20

Just too late to catch last month's notes was a letter from **Homer Howes** containing the sad news of the death of **Art Littlefield** after a long illness, in Minneapolis. Art leaves a wife, three sons and one daughter. Even though he was not at all well when we had our last reunion, Art

was there and many of us had the privilege of a last visit with him. . . . Homer was elected chairman of the Board of Trustees of Fisk University last April, and says that he finds this a most interesting and challenging avocation. He and Vera are planning a Mediterranean cruise next winter. He says he was interested in the item last May about **Chuck Reed's** Caribbean cruise on the "Meteor" because he and Vera were on the same ship not long ago for a cruise from Bergen, Norway to North Cape and back. . . . **Phil Young** recently celebrated his 40th anniversary with Esso Research and Engineering Company, Linden, N.J. Phil is a patent counsel in the company's legal division. He also served as company secretary from 1953 to 1959. He became a member of the New York bar in 1932 and is a member of the American, New York and New Jersey Patent Associations. Presently he is instructing a group of eight young men in the principles and practices of patent law. Phil has four children and four grandchildren. His hobby is reading—especially law, science and history. . . . Further word has been found in the Detroit newspapers about **Ed Burdell's** appointment as resident consultant to the Cranbrook Institutions. As some of you know, Ed went to Ankara, Turkey, in 1960 as consultant president of the Middle East Technical University after serving 22 years as president of Cooper Union. His task was to build a new university similar to a United States land grant college. This included administration of a large grant from a United Nations special fund. Soon after he started the project there was a revolution and new government, but the program was allowed to continue and it is still being carried on with the help of the Turkish government. Ed is quoted as follows, "The good will, understanding and direct assistance which such a university gives the Turkish people has limitless values. It is perhaps even more important than the military bases which the United States has established in Turkey. Bases can vanish overnight but men's minds and their training cannot be as easily eradicated." The new university is co-educational, has an enrollment of 1,000 students now and expects this to be 12,000 within a decade.

Just before the long summer hiatus I got a letter from **Bill Honiss** telling of his retirement after 42 years with the Ernhart Manufacturing Company of Hartford. Bill was chief of one of their design and development departments. His son is with the Connecticut Bank and Trust Company, having graduated from Tuck School at Dartmouth, and his daughter is married to J. G. Kelso, who is assistant to Jim Killian, '26. Bill expects to have more time to enjoy the activities at the Hartford Golf Club, Niantic Bay Yacht Club, Hillsboro Club of Pompano Beach and Royal Palm Polo of Boca Raton. . . . News of retirement also comes from **Snug Etter** who was president of Air Reduction Pacific Company of San Francisco and also of Ohio Chemical Pacific Company, both division of Air Reduction Company. Snug says he has no plans for the future beyond taking a good rest,

playing more golf and seeing his children and grandchildren more often than was possible in recent years. His address is **Harold P. Etter**, 1835 Willow Road, Hillsborough, Calif. . . . **Witold Kosicki** sent me a card from Warsaw, Poland, where he took two of his sons for a visit. He says they have been having a wonderful time. . . . **Henry Blau** is the author of an important technical paper which appeared in the May issue of the American Ceramic Society Bulletin. It was his acceptance address upon receiving the Toledo Glass and Ceramic Award last January. Henry is vice-president of the Federal Paper Board Company of Bogota, N.J., and of its Federal Glass Company Division. He also is a professor of glass technology at Ohio State. . . . **Archie Cochran** has been elected chairman of the board of Anaconda Aluminum Company. Formerly president, he will continue as chief executive officer. . . . **Dr. C. Richard Soderberg**, our illustrious classmate who was formerly dean of the College of Engineering at M.I.T., has been named educational consultant to the U.S. Military Academy's Academic Board. **David Reed** is now at River Ridge, Brevard, N.C. . . . **Fred Bocher** is in White Plains, N.Y., 71 East Post Road. . . . **Art Radasch** is in Upper Montclair, N.J., 160 Gordonhurst Avenue. . . . **Edmund G. Wilson** lives in Newton, Mass., 7 Charlesbank Road. . . . **L. D. Wilson** is in Rye, N.Y., 130 Theo Fremd Avenue.

I don't believe I reported the death, last June, of our beloved classmate **Ken Akers**. Ken had been in the casualty insurance business in Boston for many years. Always a loyal member of his class, his absence at future reunions will be keenly felt. He was one of the class's most popular undergraduates and his popularity never diminished throughout the years. He leaves his wife Mary and two children. . . . Another severe loss to the Class was incurred by the death of **Carl Leander** in Hyannisport last May. Carl was a chemical engineer in New York for a number of years. He then graduated from Harvard Dental School and practiced in Lexington, Mass., for some years before becoming a member of the faculty at University of Pennsylvania Dental School. He leaves his wife, Eva, two sons and two grandchildren. . . . Through the kindness of Wally Ross, I received word of the death of **Harold Kepner** last August. Harold was professor emeritus of civil engineering at Utah State University. He taught at R.P.I. after getting his master's degree at M.I.T. and had been at Utah State since 1930. He was a member of the American Society of Civil Engineers, and the American Society of Engineering Education and a past president of the Utah State Faculty Association. He leaves his wife, Barbara, a daughter, two sons, and three grandchildren. Harold had a wonderful reputation as a teacher and we have always felt honored that he was a member of our class. We shall continue to honor his memory.

Picked up from the Boston Globe was this amusing tidbit. "Forty-five years ago, **J. Telford Elliott** of Newburyport, an

engineering student at M.I.T., was on a train headed for school when someone stole his slide rule. The other day his slide rule, which bore his name and address, was returned to him by mail. Elliott is a funeral director in Newburyport."—**Harold Bugbee**, Secretary, 21 Everell Road, Winchester, Mass.

'21

David O. Woodbury, interpreter of technical science in every medium of communication,—books, articles, radio, TV, movies,—teacher, lecturer, inventor, has made his permanent home in his native State of Maine. Writing from his new home on Shore Road, Ogunquit, Dave says: "The principal news around here is that we've just built and moved into a new house, the sixth in our series. People ask where we will build next and why. Answer to both is that this is the last. We've had it! Of the six, two are left and the trail of abandoned homes, which leads back to California via Arizona is obliterated. Four of the six were sold as we wore them out and with only one did the government bother us with capital gains, as the other three went at a loss. However, we are still afloat. Most people in their right minds don't build houses, they buy 'em. Somehow, we can't do that. We have never seen a house yet we could live in and like it. Fortunately, we have fared a trifle better than the Blandings, who, as you may remember, got taken. Some people play golf, some go to Europe; we build a house, sometimes 'a lot' better, sometimes 'infinitely' better than the one before it.

"Actually, every one has been an advance over the one before, though there is always something reminiscent about each. A corner fireplace, for instance. We stole the first one in California, redesigned it and shoved it in. The masons said it couldn't be built but, by standing over them, we got what we wanted, except it smoked. The next two had some of the bugs removed—even amateurs will learn. The mason who put the third one together also said it couldn't be done and sat on top of the chimney in a rage, throwing bricks into the Atlantic. But we got it finally and it doesn't smoke. House-building has a lot of development engineering to it. Each time you correct mistakes. And each time, India, who does all the interior decorating and most of the painting, keeps coming up with more and brighter colors. This one we just moved into is the last word in liveliness.

"I do not do any decorating, only the engineering. After having drawn the plans on the back of an envelope (we break every rule by never having more than a ground plan), we hang around with the carpenters, adding an inch here and there or moving a door. By making the revisions before it is too late there are no changes of consequence. This, of course, requires a long-suffering carpenter, mason, plumber, etc., but by India's serving coffee and cookies twice a day, we have got by without any fights. Our latest crew were veritable paragons, a real team.

Carpenters would do concrete work, cut down trees, survey, take rubbish to the town dump; plumbers would saw up wood, dig trenches, pound nails; masons would build stone walls, spread garden soil. I'm sure you realize what this means to the homeowner. Anyway, it's the truth here in Maine and a principal reason why we hauled up stakes and came back home for our final effort. If one is unattached as I am in the writing business, building a house is one of the most fruitful ways to regain confidence in your fellow man and yourself. If it took six houses to prove it, the outlay was well worth it. . . . The Ice Age book came out in September. ("The Great White Mantle," published at \$4.95 by the Viking Press, 625 Madison Avenue, New York 22, N.Y.—Cac.) I'm hoping that sales will prove a little less glacial than the subject." Thanks, Dave.

Samuel F. Chalfin has a new assignment with the American Machine and Foundry Overseas Corporation and has left Sao Paulo, Brazil, to head the Inter-Americana Branch, located at Maximo Alomar 1170 in Rio Piedras, Puerto Rico.

. . . **Robert S. Cook** writes that he and Bertha have again made their seasonal migration from Canandaigua, N. Y., to their home in Ft. Lauderdale, Fla. . . . Drop a note of cheer to **Lewis S. Edgerton**, Course XV, at his new address, 52 Centre Street, Nantucket, Mass. A brief letter from his wife, Mildred, told of their move from Syracuse, N. Y., and added the grievous news that Lewis is incapacitated as a result of a cerebral hemorrhage suffered a year ago. . . . Still no direct word has been received from **William F. Kennedy** in response to the remarks his former associate, Pat Hogan, made to us, but we have learned that Bill's new retirement address is 1330 East Avalon Drive, Phoenix 14, Ariz. . . . We neglected to add to the story published last month about **Richard H. Morris** that he and Marion will make their new home at 2416 Third Street, Ocean Park, Calif., on their return from the two-year trip around the world which they started last summer. . . . As a result of his election as vice-president of the New Bedford Gas and Edison Light Company last year, **Fred M. Rowell** has moved from Osterville to Mattapoisett, Mass., where mail should be addressed to P. O. Box 272. . . . **Franklin T. Flaherty** has moved from Swarthmore, Pa., to Lincoln Road, Lincoln, Mass. Is this retirement, Frank?

The following addresses have also been received: **John H. Driggs**, 116 Barcelona Avenue, San Clemente, Calif.; **Albert E. Fowler, Jr.**, R.D. No. 5, Van Holten Road, Somerville, N. J.; **Kenneth V. Hill**, 14 East Jackson Street, Chicago 14, Ill.; **A. Teodorico Quiros**, Apartado 1219, San Jose, Costa Rica; **John J. Stanton**, 1403 S.W. Broadway Drive, Portland 1, Ore.; **Wilfred B. Sylvester**, 127 Church Street, Watertown 72, Mass. . . . A welcome letter from **Leon** and **Emma Lloyd** of 35 Spruce Street, Westerly R. I., says: "In June, we told you we would write about our younger daughter, Barbara, who sang with the M.I.T. Choral Society in Europe last summer. Here are the facts of a most significant vacation: Barbara,

Simmons College, '58, was among the 60 members of the M.I.T. Choral Society that toured Europe from June 12 to July 14. Concerts were given in Norwich, Cambridge and London, England; in Paris, France; and in Bonn, West Berlin and Munich, Germany. The group also did tapings for radio broadcasts. Living in private homes in West Berlin was a high point of the tour. We both send best wishes to you and Maxine and trust that Ellie is continuing to enjoy her physical therapy work—certainly a great contribution to society." Barbara, who was a "junior sister" to our daughter, Eleanor, at Simmons, is a member of the Boston Visiting Nurse Association. She will be remembered as the subject of the article in "Look Magazine" entitled "Everybody's Favorite Nurse." . . . The syndicated newspaper feature, "Their Birthday," honored Dr. **Stewart P. Coleman** on his natal day. The retired vice-president of the Standard Oil Company of New Jersey was born in Corpus Christi, Texas.

Augustus B. Kinzel is the first to be named an honorary member of the Engineers Joint Council Board of Directors, which he served as president for 1961. He is still active on a number of committees. Gus was also named by President Kennedy as a member of the National Science Foundation committee for the selection of the first recipient of the National Medal of Science, for which nominations were received last August.

. . . **Jackson W. Kendall**, Vice-president of Bekins Van Lines, advertises "Bekins Certified Electronics Moving" in a Wescon issue of "Electronics News," stating that Bekins engineers are certified in a special electronics school to serve the "largest moving and storage business in the world." . . . The "Wall Street Journal" has been most complimentary in publishing large pictures of outstanding members of the Class of '21 in various advertisements. The latest is a photograph of **Dana C. Huntington** in his Framingham, Mass., office, captioned, in part: "President of the Dennison Manufacturing Company, famous maker of paper specialties." . . . **William A. Collins** of Taunton, Mass., a retired Scout executive and former member of the National Camping School of the Boy Scouts of America, served for 27 years as the director of Camp Norse of the Taunton Council. Last year, he headed a capital fund drive for camp improvements which was subscribed in the total of \$198,000. Bill started his scouting in Norwich, Conn., and became an Eagle Scout. He has since served as a Scoutmaster, Sea Scout Skipper and district commissioner. Both of his sons, one a physician and the other a public relations man for the Boston Chamber of Commerce, are Eagle Scouts. Bill is also a member of the Taunton Rotary Club. . . . Madeline and **Ralph M. Shaw, Jr.**, took a motor trip to the Seattle World's Fair via California. They drove from Los Angeles through the San Joaquin Valley so as to visit Yosemite. Ralph notes that many California farmers have plowed up grape orchards and have cut down peach and plum trees in order to plant cotton.

Robert E. Waterman, Senior Vice-president of the Schering Corporation, makers of pharmaceuticals, has retired after 18 years of service. He will continue to serve on the board of directors. Prior to his association with Schering, Bob spent 18 years with the Bell System, which he joined in 1922 as a chemist in the engineering department of the Western Electric Company. One of his avocations involved several years' work on vitamins with a group at Columbia University, which culminated in the synthesis of vitamin B-1. From 1940 to 1944, he was assistant to the president of the Research Corporation which administered the patents covering the synthesis. As consultant to the Alien Property custodian during World War II, he served as special representative on the production of atabrine, an anti-malarial drug distributed to the armed forces. He went to Schering in 1944 as director and vice-president and was assigned responsibility for research and development, which he expanded from 52 to 340 employees. He was made senior vice-president in 1961. Bob has written papers on the isolation and testing of vitamin B-1, on chemical phases of rubber technology and wood preservation, medicinal agents, and technical aspects of the pharmaceutical industry. He is co-founder and member of the management committee of the Williams-Waterman Fund for the Combat of Dietary Diseases; member and former chairman of the North Jersey Section of the American Chemical Society; member of the American Society of Biological Chemists; and fellow of the New York Academy of Science. A native of Orange, N.J., Bob attended Williams before receiving his bachelor's degree with us in Course X. Married to the former Elizabeth Williams of Summit, N.J., the Watermans and their two children reside on Spring Valley Road, Morristown, N.J. They plan to spend their summers in Morristown and their winters at their recently acquired home in Delray Beach, Fla.

Ernest Henderson, President, and **Robert L. Moore**, Chairman of the Sheraton Corporation, opened their new Sheraton Motor Inn in New York City as the "world's largest motel." Sheraton now has 66 hotels scattered from Tel Aviv to Honolulu, where another hotel is scheduled to open next month. At the annual meeting, Ernie revealed a new tourist class hotel program, destined to be the forerunner of a nationwide chain under the Sheraton Tourist Class Hotel name. . . . Maxine and your secretary took our biennial motor trip to Grand Rapids, Mich., to see our daughter, Eleanor, and meet the other two-thirds of the local Class of '21 representatives, whom we missed last time. Calls to **William B. McGorum** produced no answers, but we ascertained that he and Mildred still live at 423 Madison Avenue, S. E., and he is still active in the management of the Darling Freight System, Inc. **Harrison H. Mosher**, who lives a few doors away at 545 Madison, S.E., has retired as merchandise manager for the American Seating Company, but continues private consulting work in between his home do-it-yourself chores. He was in the same Har-

vard class as Ernie Henderson and Dave Woodbury and later attended the Harvard Business School. Active in local M.I.T. affairs, he entertained us at his home and at the Peninsular Club. He has a farm in nearby Ada, Mich., but ultimately plans to return to his native Maine. He and Frieda have a son, **Harri-son, Jr.**, who is with W. R. Grace and Company in Paris.

We had luncheon with **Alex and Howard B. Tuthill** at the Kent Country Club in Grand Rapids and then took a tour of one of the four plants of the Oliver Machinery Company of which he is president. They have two sons, Richard, a Northwestern alumnus, and Howard, Jr., Williams graduate, both active in the Oliver Company, and a married daughter who attended Smith. There are 10 grandchildren. Howard is a former chairman of the board of the D. A. Blodgett Hospital, Alex heads the hospital's Women's Guild, and Dick administers the hospital's group devoted to the care of children. The Tuthills have a summer home at Grand Haven, on the shore of Lake Michigan, and all are enthusiastic sailors. Dick had just returned from participating in the Newport to Bermuda race. With a wood-working plant, a pattern-making plant, a foundry and a packaging and label division, the Oliver activities cover a wide range of products, including some clever new automatic weighing, packaging and labeling machines which we were privileged to see in the development stages. Ellie recently sent an article from a local publication, which says that Howard and Alex spent much of the summer cruising on Lake Michigan in their new boat. Howard's home address is 1734 Pontiac Road, S.E., East Grand Rapids.

We are in receipt of some excellent and much-appreciated gifts, including the pictorially gorgeous "Vermont Life Magazine," which arrived in all its New England autumn grandeur through the courtesy of **Chick** and **Maida Dubé**. This more than makes up for our failure to get color pictures of fall foliage in Massachusetts and New Hampshire last year on a trip with the Dubés, because the season was two weeks later than usual. Helen and **Ray St. Laurent** sent a complete mint set of Canadian postage stamps issued in 1961 from their stop in Banff, Alberta, last summer. Alfred and your secretary will have to get busy on new album pages to set off the several Canadian sets and blocks which Helen has already sent us. Ray has sent various notes from their extended trip. In Los Angeles, he visited Architect **Sam Lundén**. The Lundens were in Europe during the summer of 1961 and were unable to attend our 40th Reunion. **Jack** and **Marge Kendall** drove Ray and Helen over an extensive scenic shore area north of Los Angeles and then through the nearby mountains. In Seattle, Ray was unsuccessful in reaching **Eugene W. Rudow**, President of the Scientific Instrument Company. He talked to son Ted, who reported that Gene is in semi-retirement.

Early in September, we had a delightful long-distance call from Class Agent **Edmund G. Farrand** in Leesburg, Ga.

Ed has sold the Colonial Plantation and has moved nearby to a largely wooded area with a number of buildings. He would like to have '21'ers include a visit to him on their travels south. Ed said he had canceled a proposed trip to the Fourth Alumni Officers' Conference at M.I.T., but he and Helen still planned to visit Technology at a later date. During last summer they had gone to New Mexico to see their son, David. A few days later, **Sumner Hayward** drove us to Cambridge for the conference and we spent two of the most delightful days imaginable on the M.I.T. campus in pleasant fellowship and with outstanding speakers and panel sessions and the most generous hospitality. The Class of '21 was represented by **Mich Bawden**, **Cac Clarke**, **Sumner Hayward**, **Sam Lundén**, **Ray St. Laurent**, **Ted Steffian** and **Joe Wenick**. Appropriately, several of the group were housed in the Irving D. Jakobson suite of Baker House. Sam Lundén was the moderator of the special seminar for club officers. . . . Ray St. Laurent has since written that he, too, had a pleasant phone call from Ed Farrand. Ray sent a long letter from **Helier Rodriguez** in Madrid, Spain, in which Helier said: "**Ollie Bardes** was here for a couple of days, and we had the pleasure of taking him around to show him the city and surrounding countryside. I enjoyed his visit very much." We also acknowledge receipt from Helier of a book entitled "Red Star Over Cuba," published by Hillman Books. **Sumner Hayward** told us he had spent a busy weekend at Technology early last summer with a '21 group comprising **Mich Bawden**, **Irv Jakobson** and **Mel Jenney**, telephoning classmates all over the 50 States in the interest of the Second Century Fund. . . . **Joe** and **Dorothy Wenick**, **Sumner** and **Betty Hayward** and **Cac** and **Maxine Clarke** attended the "Ladies Night" banquet of the M.I.T. Club of Northern New Jersey, which was addressed by Dr. Warren K. Lewis, '05. **Joe**, **Sumner** and your secretary were also present at the fall meeting of the club, at which the speaker was Dr. C. Stark Draper, '26, Head of the M.I.T. Department of Aeronautics and Astronautics.

The best of the Season's Greetings to you and yours from all of your class officers, together with all good wishes for health and happiness throughout the New Year. In order to maintain your subscription to The Review, please don't forget to send your contribution to the 23rd annual Amity Fund, which has just started. Also, direct a little of the season's good cheer to your secretaries in the form of a note, a letter or a complete autobiography.—**Carole A. Clarke**, Secretary, c/o International Electric Corporation, Route 17 and Garden State Parkway, Paramus, N. J.; **Edwin T. Steffian**, Assistant Secretary, c/o Edwin T. Steffian and Associates, 376 Boylston Street, Boston.

'22

It is still confusing to your secretary to write December notes in October but "Hot News" I have, "Cold News" you'll

get. Another class reunion was held September 7 and 8 during the Alumni Officers' Conference, attended by Parke Appel, David Broudy, Robert Brown, Yardley Chittick, Fred Dillon, Warren Ferguson, Whitworth Ferguson, Willard Purinton and Preston Robinson. Special advice was given to officers as well as to Educational Counsellors and representatives of the Alumni Fund. . . . During this constructive and enjoyable occasion we learned that **Arnold W. Milliken** had been elected executive vice-president of the New York State Electric and Gas Corporation. Congratulations! It must have been a result of the ideas he received while at our 40th in June. . . . **Samuel M. Seegal** of Brookline was chosen to represent the Massachusetts Division of the American Cancer Society in Moscow in September. He is executive vice-president of William Filene's Sons Company in Boston and has recently been elected to the board of directors of the National Council on the Aging. . . . **Fay H. Osborne** Senior Vice-president of C. H. Dexter and Sons, has retired to a consulting basis and will continue his laboratory experiments. He previously brought out a silky-texture paper used for soft silver wrappings and meat casings. He also adapted long-fibered paper for use in tea bags and has perfected a heat sealable paper for tea bag and other uses. He has made papers of quartz fibres for a temperature range of 450 to 3,000 degrees F. and a Tetryl fibre paper used for linings in wash and wear suits and rain coats. He will spend his summers at Lake Sunapee while retaining his residence at Windsor Locks.

Good reading is the presidential address which **James F. Brittain** gave before the Boston Society of Civil Engineers in April. . . . Professor **Joseph H. Keenan** was reported as speaking on the development of a new axiom from which all the relations of classical thermodynamics can be deduced, at a conference at Rensselaer Polytechnical Institute. . . . As a spoke in the area Wheel of Progress, **Richard G. Stall**, President, Stall and Dean Manufacturing Company, was pictured as Brockton's big booster of industrial welfare and United Fund interests. They have given him credit as a boating fan and entertainer of Russian dignitaries in helping the U.S. exchange program. . . . Credit should be given to **Marion S. Dimmock** for his thoughts on religion and democracy during the past Lenten Season. As an architect in New Britain, Conn., he has designed many buildings in the area and overseas. . . . The Philadelphia Electric Company has announced that **Philip M. Alden** has been elected chairman of the Better Light, Better Sight Bureau for the next two years. He is sales manager of the Residential and Commercial Sales Department of Philadelphia Electric. He has also been active in local civic affairs, in the United Fund and as president of the City Business Club. . . . The Engineering Foundaion has announced the election of **Allan H. Kidder** of the Philadelphia Electric Company as its chairman. Mr. Kidder is a fellow of the American Institute of Electrical Engineering, chair-

man of its Professional Conduct Committee and a member of its Board of Examiners and Research Committee.

An honorary degree of doctor of science from Grinnell College has been conferred on **L. F. Hickernell**, Vice-president, Engineering of the Anaconda Wire and Cable Company. He is a fellow and past president of the American Institute of Electrical Engineers and is a member of the board of directors of United Engineering Trustees, the Engineering Foundation and the Electrical Historical Foundation. He previously received a doctor of engineering degree from Polytechnic Institute of Brooklyn. . . . A very good looking picture and article in the Erie-Lackawanna Railroad Magazine proclaims that **Whitworth Ferguson** of Buffalo, N.Y., has been elected as a member of the board of directors. He presumably will now advise everyone to travel by rail. . . . Among the new addresses are **Erb Ditton**, New York City; **Sydney M. Strauss**, New York City; **Henry M. Schley**, West Palm Beach, Fla.; **Thomas H. Swisher**, Chicago; **Francis E. Slayter**, San Francisco; **Rudolph F. Whitelegg**, Garfield, N.J.; **Vesper A. Schlenker**, Fort Wayne; **James M. Waechter**, Cleveland; **Howard B. Upham**, Pompano Beach, Fla., Dr. **Preston Robinson**, Williamstown; **E. Allen Reinhardt**, Jacksonville, Fla.; **Roger D. Carver**, Signal Mountain, Tenn.; **Frederick J. Burt**, Boulder, Colo. **F. Willett Walton, Jr.**, North Edgcomb, Maine. . . . The sympathies of the officers and members of the class go to the families of **Ian H. Parsons** of London, England; **William J. Miller**, of Kerrville, Texas; **Harold J. Kane** of Braintree, Mass.; **Malcom K. Sheppard** of Shaker Heights; **William G. Mayer** of Asbury Park and **Arthur L. Jones** of Tryon, N.C.—**Whitworth Ferguson**, Secretary, 333 Ellicott Street, Buffalo 3, N.Y.; **Oscar H. Horovitz**, Assistant Secretary, 33 Island Street, Boston 19, Mass.

'23

Season's greetings! . . . Your secretary and Mrs. Hayden motored in Europe during September and early October and had a very interesting vacation. We visited Southern Germany, Austria, Italy as far south as Amalfi, Switzerland, Leichtenstein, France (re-visiting some of my World War I territory) Belgium and Holland. . . . The response to the 40th Reunion questionnaire has been excellent. As of the middle of October, 123 members of our class had indicated an interest in being with us next June. This promises to be the best reunion yet—and it should be. . . . The following from **Bill LaLonde**: "Marion and I are going to be at Chatham Bars next June. We missed the 30th because of meetings in Florida of the American Society of Civil Engineers (past national director) and of the American Society for Engineering Education, and the 35th because of a meeting at Berkeley, Calif., of ASEE (again an officer of the C.E. Division). But no conflict next June. We

had an interesting ASEE meeting last June at the USAF Academy at Colorado Springs. We drove out and came home through Canada, going north of Lakes Superior and Huron. Last year I was retired as Captain (Civil Engr. Corps) USNR with 25 years of reserve time, five years being active time in WW II. I have gotten together with **Edward S. Sheiry** to get out a new revised third edition of Ed's book 'Elements of Structural Engineering.' Previously I had been author of 'Professional Engineers Examination Questions and Answers' and Editor-in-Chief of a 'Coverete Engineering Handbook.' I always enjoy reading the 1923 notes but never find an appropriate occasion to drop you a line. But here is the occasion!"

"Dave" **Arthur W. Davenport**, on special assignment for Stone & Webster after his return from Brazil in 1960, traveled by automobile more than 56,000 miles, and is now retired from his company after 46 years. During his travels, he visited some of the M.I.T. Alumni and gleaned the following news: As retired Chairman of the Board of Electrolux Corporation, **Walter Dietz** of the Class of '23, with his wife, Elsie, has retired to his favorite gardenspot in Delray Beach, Fla. They were living a wonderful relaxed life of sports in the sunshine when suddenly Walter heard the "call" and put his name on the slate for election as mayor of the city. He won the election by 13 votes and is now the "honorable Mayor" and doing a superb job! We predict he will like it so well that he will run again next term, and further that Elsie, with all her enthusiasm, might even join him as a councilwoman or, who knows—even vice mayor! This spring, we visited **Herb** and **Bernice Barnby**, at their lovely home in Toledo, Ohio, where they had just returned from a trip 'round the world. Herb was to retire from Owens-Illinois Company but was retained to complete a project he had begun—so he will have to wait a few months to do all the things he planned during his retirement.

The Indiana Business Review of June, 1962, had an interesting article by our **George W. Bricker, Jr.**, entitled "Good Organization Planning Anticipates Operating Changes." George covered very clearly the two phases of planning—static organization planning and dynamic organization planning—indicating the president's responsibility, manpower planning and industry's national responsibility.

The following from **Dave Joy**: "Took early retirement last October and with my wife went on a four-month 'round the world trip by way of the Arab countries, India, the south Asian countries, Japan and the Philippines. Met unexpectedly **Ray Starr**, with his wife, at a little seaside inn at Pusi on the Bay of Bengal, India, who was on a combined business and pleasure trip." . . . A short note from **Forrest Lange** says he had a fine six weeks' trip through Canada to the World's Fair, the West Coast, Yellowstone Park and the Black Hills during August. Forrest is head of Mobilization Planning at the Portsmouth Naval Shipyard.

We regret to report the following deaths: **Louis H. Skidmore** died on September 27 at age 65, in Winter Haven, Fla. He founded the architectural firm of Skidmore, Owings and Merrill, builders of the Manhattanville District town of Oak Ridge, Tenn., in World War II and designers of banks, hospitals, plants and other buildings in New York and across the country. He had lived on Lake Eloise since his retirement in 1955. Mr. Skidmore's drive for modern and original concepts in architecture was evident in the wide range of work done by the firm he founded with Nathaniel A. Owings in 1936. His firm was one of the pioneers in glass-walled buildings, long before they became the vogue after World War II. An artist once recalled that Mr. Skidmore asked him to "put plenty of trees" in a rendering to make the vast expanse of glass more acceptable to the client. . . . **Charles F. McQuestion** died in New York City on July 20 of a heart attack. . . . **Beverly M. Brown** died in Philadelphia last August 9. We wish to report the following address changes: **Mrs. Josephine K. Frans**, Avenue de L'Araucaria 27, Brussels, Belgium; **Phra Bisal Sukhumvid**, Saladaing House 5 Silom Road, Bangkok, Thailand; **Robert A. Wilson**, 85 Exchange St., Portland, Maine; **Herman Swett**, c/o Boston Bonnie Fisheries, Trilling Way, Boston, 10, Mass.—**Herbert L. Hayden**, Secretary, E. I. du Pont de Nemours and Company, Leominster, Mass.; **Albert S. Redway**, Assistant Secretary, 47 Deepwood Drive, Hamden 17, Conn.

'24

A note from **Paul Cardinal** informs us that **Griff Crafts**, attending a meeting in the Poconos in September, had "some sort of an attack" and was rushed to New York in an ambulance. Although there was no direct word, he seems to be okay. At that same meeting, according to a news release, Paul, former treasurer, was elected vice-president of the Drug, Chemical and Allied Trades Association, Inc., which, because it takes up so much space, will be referred to in future columns as DCAT. . . . Maybe you saw in the Wall Street Journal that **Ed Dunlaevy** is now one of the Select People. Phelps-Dodge Copper Products and Ed, as its president, were indicted by a Federal grand jury along with 10 other major copper and brass fabricators for price fixing. Said a Phelps-Dodge spokesman: "We do not believe that the company nor any individual has violated the law. We intend to contest the indictment and are confident we will be exonerated." . . . **Joe Mares** is one of six "leaders of the American chemical profession" appointed to the advisory board of "Industrial and Engineering Chemistry," the American Chemical Society's magazine. One thing the announcement pointed out that we'd forgotten, Joe is a native of Montana. He's such a dyed-in-the-wool Texan now that it seems he must have been a native son.

An item we didn't get into the last

column: Dr. **Hudson Hoagland**, President of the American Academy of Arts and Sciences and executive director of the Worcester Foundation for Experimental Biology, was commencement speaker at Clark University last June. He was given an honorary doctor of laws degree at the same time. Dr. Hoagland got his master's degree with us. . . . You may not know it, but Wally Ross has been retired from TCA for some years. He's now with the Student Christian Movement in New England, in Harvard Square, and continues his vast volume of correspondence. One reply, from **Archie Carothers**, he forwarded to your secretary. Archie, a veteran of World War I, is about to retire, and is facing the problem of being occupied "until the new adventure starts." It was good hearing from Archie after all these years, even if indirectly. . . . Cards from all over the world show that **Hank Simonds** still gets around, but his latest, written from Trinidad, says "Now for a three months' vacation." Sounds like a pleasant prospect. . . . You may not recall **Richard L. Nims**. He entered with us but withdrew in our sophomore year. Dick had been in the oil business in suburban Boston for many years. Last May he passed away. . . . Hope you all had a good Thanksgiving and that you still feel young enough to find the Christmas season a time of heightening excitement. If you have grandchildren around you can't miss. A merry one to all.—**Henry B. Kane**, Secretary, Room 1-272, M.I.T., Cambridge 39, Mass.

'25

A number of news clippings have accumulated during the past month, and although they are not all new they should be of interest to members of the class. . . . Although **Bob Dietzold** resides in New Jersey, a news item in an Akron, Ohio, paper indicates that he has been one of the active engineers on the Telstar program. The Akron area is interested in Bob because this was his home town, and he was one of the first Eagle Scouts in that town. He is at present director of the materials systems studies laboratory for Bell Telephone Company. . . . From the Hartford, Conn., Courant comes word that **Lester C. Smith**, President of the Spencer Turbine Company, is a co-chairman of the Chamber of Commerce Committee which has as its job, "Keep West Hartford a Leader." . . . The St. Louis Post-Dispatch a few months ago devoted an entire page to **James S. McDonnell, Jr.**, President of the McDonnell Aircraft Company, a company which 23 years ago consisted of one man, James McDonnell, whose chief assets were energy, determination, and a briefcase full of ideas about how airplanes should be built. Today the company is doing an annual business of \$345,000,000, employs 23,200 persons, and is by far the largest employer in the State of Missouri. The company today is thinking more and more in space terms rather than solely in terms of planes.

Carole A. Clarke, Secretary of the Class of '21, very thoughtfully sent me a flier from the Ronald Press Company, noting two books by **Yu H. Ku**, Professor of Electrical Engineering of the University of Pennsylvania. The titles are "Analysis and Control of Nonlinear Systems," and "Electrical Energy Conversion." . . . From Atlanta, Ga., word reaches the Alumni Association that **Thomas M. Lowe** retired from Louisiana State University on June 10, 1962, with the title of emeritus professor of civil engineering. He now is working for his son in the firm of Thomas M. Lowe, Jr. & Associates, Inc., Consulting Engineers, with headquarters in Atlanta. . . . One change of address indicates that **Edward B. Sandberg** has moved from Hampton Falls, N.H., to Phoenix, Ariz. The guess would be that he has retired. . . . Last June 4, **George F. Chapline**, a retired navy captain, was married to Mrs. Allene Crowds Borden in a quiet ceremony at 825 Fifth Avenue, New York City. Captain Chapline is a graduate of the Naval Academy and M.I.T. Class of 1925; is a veteran of World Wars I and II; and has served as vice-president and director of the Wright Aeronautical Corporation, also as president and general manager of the Brewster Aeronautical Corporation.

There are two deaths to report—that of **Heracio Alfaro** of Vitoria, Spain, on August 10, 1962; and on October 2, 1962, **Elliott E. McDowell**, former Massachusetts Correction Commissioner, passed away at the Wilkes-Barre, Pa., Veterans' Hospital. Mr. McDowell was superintendent of industry at the Norfolk, Mass., Prison Colony for 14 years, became commissioner of correction in 1949, and retired in 1951.—**F. L. Foster**, Secretary, Room 5-105, M.I.T., Cambridge 39, Mass.

'26

This has never happened before; I'm writing the notes two weeks before they are due. However, a look at my schedule two weeks from now indicates that it's now or never. Also, it's a beautiful shiny morning here at Pigeon Cove after a three-day nor'easter during which the winds hit near hurricane velocity. We were not here, but the tenants in our guest house mopped all one night and left the next morning in a hurry. (I forgot to tell them to drop the storm sash into place.) This morning the lobstermen are heading out to survey the damage to their pots which they fear has been severe. The wild rolling sea tangles their pots, lines, buoys, etc., together into a mass with almost no salvage value. It's part of their cost of doing business and now they will be busy all winter building new equipment. Next time you wince at the price of lobsters, think of the fishermen in front of pot-bellied stoves in their shacks nailing slatted pots together, knitting heads, buying rope (called "pot warp"), etc. Theirs is a rugged and hazardous existence. . . . But this morning is pleasant and it's a nice day to write Class News. The envelope of clippings and letters is quite fat this time of

year. It won't be, though, by the time you are reading this copy, so please tie a string around your finger to remind yourself to send a note telling of your activities and about any classmate you have heard of or met recently. I had a pleasant surprise on Friday. The intercom in my office announced that a classmate was on the phone. "This is **John Longyear** from Detroit; I just called to tell you we read the notes regularly." John was in Boston attending a meeting of the American Production and Inventory Control Society and unfortunately there was insufficient time for a luncheon together. I recalled that John was with Detroit Edison but was unaware that he had 36 years' service. He mentioned that their only raw material purchase is coal which makes other procurement more significant than in most businesses. John's assignment is assistant director of material control. I forget to ask his opinion on Paradiso's martinis. This is an Italian restaurant in Detroit that is more famous for martinis than food. Their olives are freshly stuffed with anchovies and people having cocktail parties drive across town to pick up a jar of these olives. Don't buy a bottle of olives at the grocery store that are stuffed with anchovies and think you are going to duplicate a Paradiso martini. Am I right, John? What do you think, **Gordon Spear** and **Dave Sutter**? That's worth writing me about even if you have to drive over to Paradiso's to do some research before sending your report. You might even arrange a '26 get-together there. Twist my arm enough and I'll attend.

This summer I wanted a circular published by Merrill, Lynch, Pierce, Fenner and Smith, so I wrote **Bill Forrester**. Usually when you write the vice-president of a big outfit and he happens to be away, the reply comes from the third assistant office boy. Not so if you are a member of the Class of '26 and write to "we the peepul." I received the circular in a letter from the president, a guy named **George Leness**. George explained that Bill was on a trip around the world. Upon his return, Bill replied to my letter and also wrote: "We all arrived back this week from our single one-way orbit which hardly sounds like news when I read of the miles logged elsewhere. Mrs. Forrester and I had two of our three adult children with us, Norman and Anne. We were unmistakably tourists in seven countries, and on nine different airlines. Travel was particularly pleasant in Japan, Thailand, Greece and Spain. Vital statistics: two of the party gained weight in every country visited, one lost weight in every other country and one stayed the same. Minor triumph: no excess baggage charges! Time study: by going west I finally managed to stay up all night for the first time in 36 years. The hottest class news that I have for you is that our oldest bachelor, **Arthur ("Art") Johnson**, got married this spring. He not only got married, but after all these years he moved to New York and is established at 235 East 42nd Street as a busy metallurgical consultant. I see Art occasionally and can report that he is in fine spirits and likes the new life. All the best. Sincerely, Bill For-

rester." . . . A letter this summer from Mrs. **William C. Wilder** brought the sad news of the death of her husband and our classmate. I wrote an expression of sympathy from the class and asked Mrs. Wilder for clippings from which I obtained the following: "William C. Wilder, a graduate of M.I.T., Class '26, was assistant structural engineer for the Boston & Maine Railroad until his retirement in 1958." Mrs. Wilder also wrote, "I might add that until his retirement he was a member of the American Railway Engineering Association. I have received a letter from The Society of American Military Engineers in which they state: 'Mr. Wilder was a military engineer Member of the Society, having been associated with us since November, 1924.' From this I gather my husband joined the Society while attending M.I.T." . . . I dislike ending the notes with an item of this sort but the local welder has just phoned to advise that my wheelbarrow is ready. Since a stone-mason is coming in the morning to start repairs on our sea wall I must have the equipment ready. Don't forget what I said above about writing. Since I am writing so far in advance of publication you are the first to whom I say the following. A very Merry Christmas and may 1963 be your banner year to date. Cheerio.—**George W. Smith**, Secretary, c/o E. I. duPont de Nemours and Company, 140 Federal Street, Boston, Mass.

'27

Further news from **Glenn Jackson** to add to his 35th Reunion Report: "We now have the Treasurer's Report on the 35th and my worries are over as we broke into the black for a change. Chances were sold on three M.I.T. official chairs and the lucky winners were Joe Burley, Jim Lyles and Larry Grew. A review of golf scores and 20-year averages, etc., will be published by the writer during the winter. Also, I will edit and splice together five rolls of movie films that will be available for loan to the committee by Christmas. **Arthur J. Connell**, Stone & Webster Engineering Corporation, 49 Federal Street, Boston, is endeavoring to get an overlay print of the names of the men in the reunion picture, copies of which we plan eventually to have made and mailed to all of the reunioners who bought pictures. Finally, let me thank the Committee and the Class Officers for the swell set of M.I.T. double old-fashioned glasses and the cocktail shaker they presented to me at the banquet. This warmed the cockles of my heart and I hope I can buy you all a drink in these in Amherst, N.H., before the next reunion in 1967. May you all keep well and jovial."

The Profit and Loss Statement on our 35th Reunion, submitted by **Bob Bonnar**, shows that we made, roughly, about \$202. . . . Dr. **William A. Zisman**, superintendent of the chemistry division of the U.S. Naval Research Laboratory, Washington, D.C., was named winner of the 1963 Kendall Company Award in Colloid Chemistry by the American Chemi-

cal Society, and received the \$1,000 award "for his outstanding contributions to the development of synthetic lubricants and to the basic understanding of lubricant action." This award is one of 25 prizes given by the ACS in recognition of superior contributions to chemical science and technology. The society, with 93,000 members, is the world's largest association devoted to a single science. Dr. Zisman joined the Naval Research Laboratory in 1939, organized the surface chemistry branch, and was appointed superintendent in 1956. During World War II he led a large group of scientists working on problems of urgent military importance, including extreme temperature lubrication, corrosion prevention, air-sea rescue, non-flammable hydraulic fluids, and numerous classified projects.

It is with deep regret that we record the death of **George W. Brown**, who was killed on August 15 when his car collided head-on with another automobile near the Augusta, Maine, town line. George was a native of Boston, the son of George W., Sr., and Jean (Douglas) Brown. He was a former resident of Boston, but had resided in Camden, Maine, for the past seven years. At the time of his death, he was employed by Everett L. Spear, Inc., of Rockland, Maine. He was a veteran of World War II, having served with the United States Army Intelligence Service. Besides his widow, Mrs. Hanni B. Brown, he is survived by his mother, Mrs. Jean Brown of Camden; a son, Harold H. Brown of Munich, Germany; and a daughter, Miss Brigitte M. Brown of Camden.

Now we know that the one way to get **Bob Bonnar** to write a letter is to criticize an umpire! Bob's name appeared in Joe Williams' column in the New York World-Telegram early in June in connection with rabid reader reaction to comments made by Williams in that space about a stadium brawl in which the Yankees, the Orioles, and an umpire were involved. The opening sentences of many of the controversial letters sent in were quoted, and Bob's started: "This is the first letter of its kind I've written in 55 years and it probably will be my last." . . . On the occasion of his 35th anniversary with the firm, **Thomas A. Knowles**, President of Goodyear Aircraft Corporation, was honored with a luncheon at the plant and presented with a commemorative pin. Tom has been with the company since his graduation from M.I.T. . . . **Edward D. Stone** will be one of three collaborating architects on the design project for the St. Louis downtown stadium when it gets under way. The arrangement now is that he, designer of the United States Pavilion at the Brussels World's Fair and other noted structures in Europe, Asia and America, will have primary responsibility for the outside appearance of the stadium, and will also have a voice in any field and seating arrangements that might affect the exterior form of it. For the El Panama Hotel and the Museum of Modern Art which he designed, he has won Architectural League gold medals, and has received an American Institute of Architects honor award for his University of

Arkansas Fine Arts Center. He is now designing quarters for the Institute of Nuclear Science and Technology at Aslambad, which is to become the new capital of Pakistan. At Beirut, Lebanon, he is planning a prep school and junior college campus for the American University of Beirut, an international co-educational institution sponsored by the United States Government and Near East capital.

An interesting article appeared in "Industrial Research" recently entitled "Profile: Edgerton and the Stroboscope" stating that "the story of high-speed photography is partly the story of Dr. **Harold E. Edgerton** and his fabled fourth floor research laboratory tucked away in the environs of M.I.T.'s cavernous campus. Much of photography's high-speed lighting gear evolves from prototype concepts and designs that have developed during his imaginative research. Dr. Edgerton is chairman of the board of Edgerton, Germeshausen & Grier, a Boston firm engaged in extensive high-speed filming of everything from rifle bullets to hydrogen bombs. In his relentless tracking of the unseen, he has experimented with beacon stroboscopic lights so intense that they can be seen 50 miles away, and has developed a system for photographing shock waves in the daylight. To prove its intensity, he photographed M.I.T. one night from an airplane a mile high, and the brief white flash was visible 50 miles away. When Dr. Edgerton and his colleagues began synchronizing their stroboscopes to cameras, science and industry finally had a research tool with which they could investigate high speed, non-self-illuminating phenomena. His interests, as expansive as photography's problems, have enticed him from the laboratory into deep sea explorations, aerial reconnaissance, and other diverse fields. The list of certificates, medals, awards and honorary degrees attesting to the creativity of his problem-solving mind already reads like a phone directory, and promises to lengthen in years to come."

James G. Van Derpool was recently appointed executive director of a 12-member Landmarks Preservation Commission, set up by the mayor's office to insure that sites in New York City for public improvement will not be cleared in the future until it has been made certain that no landmarks or structures of aesthetic or historic importance will be destroyed. The Commission will study the sites and then either certify that they may be cleared, or list any landmarks to be preserved, thus insuring that none will be lost because of lack of notice. Jim is professor of history of architecture at the Columbia University School of Architecture, and makes his home at 570 Park Avenue. His many past assignments included being national chairman of the Advisory Committee for the Historic American Buildings Survey of the National Park Service from 1956 to 1961, and he has been a trustee of the American Scenic and Historic Preservation Society since 1949. . . . After 26 years of service with Haynes Stellite Company, a division of Union Carbide Corporation, **F. Sidney Badger** has accepted a new

position with North American Aviation, Inc., in its Rocketdyne Division, located in Canoga Park, Los Angeles, Calif. He will be manager of Rocketdyne's materials and processes for the liquid rocket propulsion division. Rocketdyne is a large user of high temperature materials, a field in which Sid has been a pioneer and in which he will be increasingly active in his new position. A recipient of two U.S. patents for heat treatment of superalloys, he has written many technical articles on high temperature metallurgy and investment casting. During World War II he received the Army-Navy award for his outstanding contributions to the work of the Office of Scientific Research and Development. Sid's two children, Susie and Sidney, will be at Indiana University this fall; Susie will receive her degree in liberal arts in January, and Sidney will enter I.U. as a freshman, after three years in the 82nd Airborne. . . . Standard Oil Company (New Jersey) announced in early May the election of three new vice-presidents, one of whom is **Bud (H.W.) Fisher**. He is in charge of the company's worldwide chemical activities. A director since 1959, he previously served as joint managing director of the Iraq Petroleum Company, Ltd., in which Jersey Standard has an interest. His name appeared again in the news in late June when Standard Oil Company (N.J.) announced the formation of a new chemical co-ordination department, which move was made to intensify the company's chemical effect by broadening its markets and expanding its range of products. The new department will assist Bud in handling the parent company's responsibilities in that field.

We have received a new address for **Howard H. Burt** who has moved from Youngstown, Ohio, to P.O. Box 1164, Chapel Hill, N.C.—**J. S. Harris**, Secretary, Shell Oil Company, 50 West 50th Street, New York 20, N.Y.

'28

Ralph Joje received a very fine, newsy letter from **Maxwell Parshall**. Max and his wife, Mary, had just returned from a trip to England. The trip was made with **Cole A. Armstrong** and his wife, Maida. Cole was Max's roommate during student days while Mary and Maida were close friends at Radcliffe. After leaving home in Ft. Collins, Colo., the Parshalls first visited relatives on the way East, then stopped in Boston for a day; they spent that evening with **Fred Lewis**, X, and his wife, Janet. Finally, they met with the Armstrongs in New York and sailed August 10 on the 'Nieuw Amsterdam,' arriving at Southampton on August 17. Max had friends in England with whom he visited while the Armstrongs continued on a separate tour. During a 10-day stay, both couples did a great deal of sightseeing. They met at Southampton on August 28 and left for home on the 'Rotterdam.' The return trip was very rough due to a brush with Hurricane Alma. . . . Max is presently associate professor of civil engineering at

Colorado State University. He and Mary hope to attend the reunion at Harwichport in June.

A newspaper clipping from early July tells us that **Arthur R. Elliott**, VI-A, has been appointed chairman of the Industrial Development Board of Greater Winnipeg. Arthur has been vice-president and general manager of the Greater Winnipeg Gas Company since 1929. Before that he was division manager, Central Indiana Gas Company. . . . **Bill Kirk** appeared on a television news program recently. Bill, one of three court-appointed trustees of the troubled New York, New Haven, and Hartford Railroad, was interrogated by a news commentator on the railroad's problems. . . . A Science News release of May 27, which has only now come to our attention, announces that **Allan T. Gwathmey** was selected to receive the 1962 Distinguished Service Award of the Virginia Section of the American Chemical Society. Allan graduated from the Institute in Course XIV then, after several years as an engineer in various capacities, studied at the University of Virginia, where he received his Ph.D. in 1938. He is now professor of chemistry at the university where he has long been an inspiration to students in the search for basic knowledge. Allan's researches are in the surface properties of metal single crystals. He is the author of about 40 papers on the subject and has received wide recognition for his work. Following World War II, Allan was one of the principal proponents of the establishment of the Virginia Institute for Scientific Research for the promotion of fundamental research in the pure sciences. The Institute was established in 1948 with Allan serving as the president of the board of trustees. He has held this position ever since.—**Walter J. Smith**, Assistant Secretary, 15 Acorn Park, Cambridge, Mass.; **George I. Chatfield**, Secretary, 11 Winfield Avenue, Harrison, N. J.

'29

We have word from The Review office that **Ed Tittmann** has returned from a stint in Lima, Peru, with American Smelting and Refining. . . . We also learn that **Joe Lianso** has been appointed vice-president and general manager of the Worthington Corporation's subsidiary, Worthington Argentina S.A.I.C. and will manage their activities in Buenos Aires. Joe joined Worthington in 1929 and has served in many international, headquarters, and field assignments. He was previously in Argentina where he established the former sales company, Worthington S.A. . . . **Archie Adkins**, Course I, has joined Dynatech Corporation here as technical director of its Engineering Mechanics Department. Archie formerly headed up the Applied Mechanics and Mathematics Group at Arthur D. Little and was associate professor of applied mechanics at the Institute. . . . Again through The Review office, we learn that **Sherm Wang** has been appointed local president of the Central

Trust of China in Taipei, Taiwan.

Arthur A. Jones, Course VI-A, who is assistant chief engineer of the Anaconda Wire and Cable Company, received the Award of Merit from the A.S.T.M. in recognition of outstanding contributions to the society's research and standards work on wires for electrical conductors, and for administrative activity. . . . The following names appeared on the attendance list at Alumni Day in June: Bill Baumrucker; Mary and Arnold Conti; Louis Demakis; Fran and Paul Donahue; Charlie Frank; Mary and Frank Mead; Newell Mitchell; Olive and John Rich; Ray Shriver; Val and Bill Whiting; and "D.A." and John Wilson. We could not attend, so we did not pick up any chit-chat. . . . Since our last notes, we have heard of the untimely death of **Herford T. Blake**, Course XV. Herford was employed in the Ordnance Department of the U. S. Government in St. Louis. Besides his wife, Virginia, he is survived by two daughters, Mrs. Barbara Vecker and Sandra Sue. . . . We also have learned of the death of **Joseph H. Jennings**, Course IV-A, in December of last year.—**Fisher Hills**, Assistant Secretary, 62 Whittemore Avenue, Cambridge 40, Mass.

'30

This month we have a communication from **Larry Gonzalez**, who is attached to the U. S. Navy Shipbuilding Liaison Office at the American Embassy in The Hague. His office is concerned with procurement of small warships for the navies of the NATO countries to bring them up to NATO force goals, and this has involved extensive travel throughout Europe in the last 10 years. Larry reports that "France and Italy are in the clean-up phase, as programs there started in 1952;" he is presently concentrating on the programs in Netherlands and Norway. He and Eileen are living at Anna Pavlovnastraat 117. His daughter Margaret, a "demon hockey and basketball player and fencer," attended the Lycee Français de Londres in Paris last year and is going to school in Brussels this year. . . . **George Holt** is teaching architecture at Bennington College. He has three children: Charlotte is married and living in Bangkok, Thailand; Sarah is a research assistant at the Dartmouth Medical Center; and Charles is in the U. S. Army-Airborne. . . . **Bill Howard** is vice-president in charge of administrative services for J. Walter Thompson Company in Detroit. He is an avid sailor and a director of the Detroit Boat Club. His daughter, Susan, is married and has two children. Son Jonathan entered Brown this fall. . . . **Dick Huggard** is a distributor of contractors' equipment in Winnipeg, Manitoba. Items handled include asphalt plants and conveying systems, concrete paving equipment, crushing plants and walking draglines. He recently "loaded a dredge onto aircraft for transportation to Winusk on Hudson Bay." Dick is an honorary secretary of M.I.T. He has a son Richard, 18, and a daughter Shelly, 16. . . . **Ed Jenkins**

joined the ranks of the retired as of September 30. He had been with Johns-Manville continuously since graduation, and at the time of his retirement was Wood Fiber Products section chief at the Research and Engineering Center in Manville, N.J. He is a member of A.S.C.E., the Insulating Board Institute and TAPPI, and holds numerous patents on J-M products. He is also president of the Bridgewater Township Civic Association, a member of the School Advisory Board and a former member of the township committee, the planning and zoning board, the building committee and the mayor's committee on roads.

Notices were received this month concerning the deaths of two more of our classmates. A note from Dr. D. V. Hughes brought word that his brother **Dan Hughes** died in Middletown, N. Y., on October 1, 1961. Dan apparently was stationed in India during World War II and retired as a colonel in 1946. Shortly thereafter he contracted multiple sclerosis and spent most of the last 10 years in the hospital. Dr. Hughes reports that **Manuel Calderon** in the course of a visit to this country several years ago stopped in to see Dan. . . . A newsclip dated August 26 reports the death of "**Ducky**" (**Newman H. Drake**) in Denville, N.J. He was an officer of Drake Manufacturing Company and D-E Industries, manufacturers of machine parts in Caldwell. He is survived by his wife, Gladys; a son, Frederick, a daughter, Mrs. Richard Shute, and four grandchildren.—**Gordon K. Lister**, Secretary, 530 Fifth Avenue, New York 36, N.Y.; **Ralph W. Peters**, Assistant Secretary, 249 Hollywood Avenue, Rochester, N.Y.; **Louise Hall**, Assistant Secretary, Box 6636, College Station, Durham, N.C.

'31

A recent article in Esso's magazine on "Jersey's New Vice-presidents" says: "**Emilio G. Collado** has been a member of the Jersey board since 1960, and before that served for six years as the company's treasurer. He joined Jersey as foreign exchange manager in 1947 after a distinguished career in government, where he specialized in international finance. . . . After working as an economist with the U. S. Treasury Department and the Federal Reserve Bank of New York, he joined the Department of State in Washington, D. C. There, between 1938 and 1946, he filled various posts, including director of the Office of Financial and Development Policy and deputy to the Assistant Secretary for Economic Affairs. From 1946 to 1947 he was U. S. executive director of the International Bank for Reconstruction and Development." . . . It's a pleasure to report that our Class Prexy, **Howie Richardson**, has been elected vice-president of General Dynamics where he will handle corporate planning. (Note: Howie is conscientious about sending me news of our other classmates, but I have to find out about his new job from an article in the Boston Herald.) . . . **Herb Ahlberg**, former

plant manager for Commercial Filters Corporation, has been named assistant to the president, whom he will assist in staff and general administrative activities. . . . Tech continues to be of interest to the Worden family, too. My daughter, Babbie, who entered Wellesley this fall, showed up at home over the Columbus Day weekend with a Tech Class of '66er. As for "yours truly," I've been commuting to Europe this year on business (averaging once a month) and have been elected president and director of Edgar Steiner and Company. . . . **Ray Poor** has moved to R. F. D. No. 2 Box 148, Brunswick, Maine. . . . It's always sad to have to report the death of one of our classmates. **Bert Lown** passed away after a brief illness last August. He was plant superintendent of the Pittsfield General Hospital.—**Edwin S. Worden**, Secretary, 35 Minute Man Hill, Westport, Conn.; **Gordon Speedie**, Assistant Secretary, 90 Fal-mouth Road, Arlington 74, Mass.

'32

Several changes of position and location will be of interest to class members. **Samuel G. Nordlinger** of Washington, D. C., has been appointed Scientific Representative of the U. S. Atomic Energy Commission at the American Embassy in London. He will assume responsibility for liaison with the atomic energy authorities of the United Kingdom and Ireland in the program for the peaceful uses of atomic energy. . . . **Eugene P. Worthen**, of Braintree, Mass., has been appointed assistant technical manager of Bethlehem Steel Company's Shipbuilding Division at Quincy, Mass. He will assist in management of the Central Technical Department which provides engineering and research for Bethlehem's ten shipbuilding and ship repair yards. . . . **Robert L. Strong**, of Larchmont, N. Y., has been appointed vice-president of Johnson and Higgins. He joined the firm, which is one of the largest insurance brokerage firms in the U. S., in 1947 as manager of the engineering and rate survey department. . . . In June, **Manson Benedict**, Professor and head of M.I.T.'s Nuclear Engineering Department, was installed as the new president of the American Nuclear Society. In addition to authoring numerous papers on nuclear engineering and co-authoring a textbook on Nuclear Chemical Engineering, he is serving as chairman of the AEC's General Advisory Committee and on the Board of Directors of National Research Corporation, Cambridge, Mass., and of Nuclear Science and Engineering Corporation, Pittsburgh, Pa.

A personal note from **James J. Robson**, of Akron, Ohio, explains his absence from the 30th Reunion as due to the familiar problem of a great congestion of children coming home from school and heading off for summer jobs. . . . A phone call from **Richard W. Berry** confirms his present address as 310 Farm Lane, Westwood, Mass. He has transferred from the New York to the Boston office of the United Fruit Company

where he is assistant vice-president. I would appreciate a few more phone calls or post-cards offering information to pass along in these notes. Or, why not call up the newly elected area vice-president nearest you and put him to work? They were listed in the November issue of The Technology Review Class News.—**Elwood W. Schafer**, Secretary, Room 10-318, Ext. 621, M. I. T., Cambridge 39.

'33

So much news this month that each of the brethren must be reported in capsulated form, with apologies. Prexy **DuPont** speaks on the subject, "Let's Join the Chorus," an urgent plea to businessmen to take responsible interest in problems of government at all levels. Congratulations to: **Jim Turner**, a new director, National Association of Manufacturers; **Gordon Pratt**, now director of student health at Ferris Institute in Michigan; **Bob Winters** for another directorate, Algoma Steel Corporation; **Don Fink**, General Manager of the Institute of Electrical and Electronic Engineers, a new post for a new organization with a membership of 160,000; **Hollinshead T. Martin**, new vice-president of Signode Steel Strapping Company. . . . We regret to report two deaths: **Russell S. Murphy**, I, on August 19 in Providence, and **Morris L. Brown**, X, on September 10 a year ago, in Indianapolis.

Bob Mills is now spending more time with the family business in Richmond but is still a youthful looking architect. . . . **C. T. Newton** is back in the office of Chief of Engineers, Army, after two years in Cambodia, Indochina. . . . **Dayt Clewell** performed a real brotherly act by turning over his house to **Quimby Duntley** for Quimby's daughter's wedding last June. . . . **Fred Murphy's** oldest daughter is now a senior at Simmons—only five more young Murphys to go! . . . **Seve Avakian's** daughter is a junior, in physics, no less, here at M.I.T. . . . Lastly but not leastly, indefatigable **Ed Goodridge** is fully recovered from a bout with the medics last summer and is making full plans for our 30th next June. . . . May the upcoming holidays be pleasant and the new year rewarding to you and your families.—**R. M. Kimball**, Secretary, Room 7-206, M.I.T., Cambridge 39, Mass.

'34

We had a fine letter from **Leland Person** from his home at 14 Highland Street, Ware, Mass. He's been elected to his second three-year term on the school committee. The work is interesting and rewarding, though it pays no salary. The job of keeping the school budget down is a whopper! The state law requires that federal and state aid to education must go into the town general fund. So when the tax rate goes up, the school committee gets the blame. Lee, as he is known in Ware, gets most of that

blame directly, because of his treasurer's background. Yet he recommends this labor of love to anyone who thinks schools cost too much. Budgets are Lee's meat, as he is assistant treasurer of Cummings Construction Company in Ware. He is one of five who now own that 83-year-old company, which specializes in construction of factories, hospitals and schools. Lee writes that his wife died of leukemia a year ago last July so that his spare time is spent in keeping house for his 11-year-old daughter and himself. She wins her dad's heart by calling him a good cook! His 15-year-old son is doing exceptionally well in his studies at Vermont Academy as well as being good at football, hockey and track there. Last summer this lad played baseball and tennis and ran several miles every few days to keep in shape. Lee's son has his eye on Middlebury, but we can be sure that it's the other way around too. Lee hopes his classmates will drop in on him. He has seen few of us, what with his dual responsibilities.

Dave Ingalls had quite a few of his M.I.T. friends to his fine home in Westfield, N.J. Dave's specialty is finding the right people for jobs. His prize find was back in 1940 when he found Ginnie, who looks after people and things at home to perfection. It was fun listening to Dave and **Neal Karr** talk about which companies are worth buying. Neal, now a director of Singer Manufacturing, is charged with finding new companies to broaden Singer's interests. Neal says he was not trained for this work. But it is obvious that as vice-president involved with manufacturing in some 30 domestic and foreign sewing machine plants as well as six subsidiaries, among them Diehl Manufacturers, he picked up quite a bit as he went along. Neal wants to move to Connecticut to make commuting easier to his new offices, now located at Rockefeller Center. He is delayed by the problem of selling his house in Summit, N.J. It seems he knows more about buying than selling.

Hoyt P. Steele was reported to be getting less sleep and working longer hours than ever before. He seems to have taken the lead in conversations which led to the signing of the consent decree between the U.S. government and his employer, General Electric Company. Hoyt didn't look tired, but instead wore that careful, studied look of an able lawyer. . . . Brown University announced the administrative appointment of **Malcolm Stevens** to the new position of assistant to the provost. Mal's chief responsibility will be the co-ordinating of contract research at the University. Mal had this type of experience at M.I.T., which he left in 1960 to work with **John Westfall** at Westfall-Chaffee Laminates of West Barrington, R.I. Mal and his family love life in Barrington and the drive back and forth to work in Providence is easy. . . . A very Merry Christmas to all of you. Help make your classmates' New Year a happy one by a few words from their old friends.—Co-Secretaries: **James Eder**, 1 Lockwood Road, Riverside, Conn.; **G. K. Crosby**, 44 Deepwood Road, Darien, Conn.; **H. E. Thayer**, 415

W. Jackson Road, Webster Groves 19, Mo.; **Malcolm S. Stevens**, 9 Glenfield Road, Barrington, R.I.

'35

The second annual class golf tournament is now down to the two finalists: **Bill Barker**, playing out of the Nashua Country Club, and **Bob Forster**, playing out of the Wellesley Country Club. A match is being arranged to determine the holder of the President's Cup for the next year, and the results should be known within the next two weeks. . . .

The sequel to **Jack Orchard's** note of last month was contained in the following announcement received from the Bureau of International Business Operations, dated September 12, 1962: "John E. Orchard of Silver Springs, Md., was sworn in September 6, 1962, as director of the Office of International Trade Fairs in the Department of Commerce, Washington, D. C. This office sponsors participation of American businesses in about 20 international exhibitions per year. Trade fairs, some even behind the Iron Curtain, are selected in conjunction with the Department of State and the United States Information Agency for the primary purpose of displaying the democratic way of life and our free enterprise system. An additional program of commercial exhibitions, designed to expand the country's export program, is soon to be launched under Orchard's direction. Orchard, a graduate of the Massachusetts Institute of Technology and of the Harvard Law School, has spent the past 20 years in executive management positions and has been president of the last three corporations in which he was employed. He has had wide experience in the food, electronics, broadcasting, building and aluminum industries, and is a member of the Young Presidents' Organization. He has been granted a leave of absence from Food Science Company, of which he is president, and will return to this position when his tour of service with the government is completed. Food Science Company supplies instruments which objectively measure the major quality factors of raw foods and of food products—color, taste, texture and defects—and which are used to control and monitor food processing equipment."

Our congratulations to Director Orchard. The work sounds extremely interesting. Jack commented as follows: "This new position with the United States Government will not only take a considerable portion of my time but will involve a tremendous amount of foreign travel, and I am afraid that I couldn't possibly do justice to my current job for you as a news gathering assistant-assistant alumni secretary. Thus and here-with with regrets 'my resignation.' His resignation as one of our district secretaries is accepted with regret. I asked Jack to keep us posted on the Trade Fairs with which he became involved so I could pass along some news on his activities.

Stanley Alexander of MITRE's Advanced Planning Staff participated in global strategy discussions held at the Naval War College June 11-15. At the Secretary of the Navy's invitation, civilian guests from a number of fields joined high ranking active, reserve, and student officers for the sessions, which climaxed the College's Naval Warfare and Command and Staff courses. The primary purpose was to gain a better understanding of the United States' problems. Authoritative addresses and frank remarks provided comprehensive background for daily committee discussions. Stanley Alexander's participation in these discussions was in line with his responsibilities at MITRE.

John T. Howard, head of the City and Regional Planning Department at M.I.T., was one of the principal speakers at a national symposium of nearly 1,000 urban transportation specialists sponsored by the Automobile Manufacturers' Association. The meeting, under the direction of the AMA Highway Economics Committee, composed of officers of major auto and truck manufacturing firms, was expected to be the largest of its kind ever held. The symposium was to consider steps that large United States cities can take to meet growing urban transportation demands. . . . It was a baby girl (Melissa) for your secretary's family, born October 5 at Richardson House. Mother and daughter are fine and are now at home. So Jack Orchard can shine up the plaque any time now and send it along. Considering the sparseness of news from the rest of you and the importance of the announcement in this paragraph, I presume it's the secretary's prerogative to go on at great length and describe all the details. I will spare you that but give you some quick mathematical calculations that have been going through my mind: first, I will be in the local elementary school PTA for 13 years and must add six more years for junior and senior high school; secondly, I'll be 70 when Melissa reaches 21 and is about ready to graduate from college. Can you conjure up a picture of the father-daughter soft ball game that year? Well, fortunately for all of us, a man is only as old as he feels, and having a baby daughter surely knocks off the years.

From the above you can see I have an endless fountain of information on which to draw if you do not come through with a letter to me. So, get busy now, if you don't want to hear all about 2 o'clock feedings, etc.—**Allan Q. Mowatt**, Secretary, 11 Castle Road, Lexington 73, Mass.; Regional Secretaries: **Edward C. Edgar**, Kerry Lane, Chappaqua, N.Y.; **Hal L. Bemis**, 510 Avonwood Road, Haverford, Pa.; **Edward J. Collins**, 904 Merchandise Mart, Chicago 54, Ill.; and **Gerald C. Rich**, 105 Pasatiempo Drive, Santa Cruz, Calif.

'36

A note from **Tony Hittl** is the source of a good bit of this month's news. While in Denver in August for the AICHE he

visited the Martin Titan missile plant. A feature article in the newest issue of the Martin Marietta News concerned vice-president **George Trimble's** testimony before the House Committee on Science and Astronautics. After discussing studies which had been carried on, the witness made two recommendations: Because "we are convinced that manned operation and maintenance of space vehicles will constitute a major long term economy in the national space program . . . we strongly recommend that a man-in-space capability continue to receive the highest priority to the end that this capability will be achieved at the earliest possible time," and "that development of the orbital base be initiated at the earliest possible time in order to provide the maximum long-range space capability at minimum cost." How about a reunion in space one of these days? Tony also said he was elected to the Pleasantville School Board without opposition and that he had attended the Alumni Officers' Conference at the Institute in September. Also present were Harry Essley, Ed Summersgill, Henry McGrath and Mal Holcombe. As your secretary I was sorry not to have been able to attend but on the night of September 8 I was camping in the rain outside of Grand Forks, N. D.—the last night of camping in a five-week cross country trek.

The mailbag contains news that **Jim Vaughan** has been elected vice-president of the M.I.T. Club of Northern, N. J., and the **Julius B. (Bus) Schliemann** is now vice-chairman of the Boston Section of the Institute of Aerospace Sciences. . . . **Bob Sherman** (Robert M., Jr.) joined the faculty of Roger Williams Junior College in Providence a year ago and last summer was appointed by the National Science Foundation as associate director and lecturer at a summer institute for secondary school teachers at Brown University. This was one of several such institutes to present the "chemical bond" approach to the teaching of chemistry. . . . **Frank Berman** has been named by the UNIVAC Division of Sperry Rand as Scientific Representative for UNIVAC Service Centers. Dr. Berman, who was previously senior development engineer for the American Car and Foundry Division of ACF Industries, Inc., will be responsible for liaison between UNIVAC Service Centers and their scientific and engineering clients. . . . Army Reserve Colonel **Edson B. Snow** has completed the U.S. Army Reserve associate command and general staff course at the Command and General Staff College, Fort Leavenworth, Kansas. Colonel Snow is regularly assigned to the 1159th Army Reserve School in Rochester, where he is employed by Eastman Kodak. Congratulations, Ed! and Frank! and all!

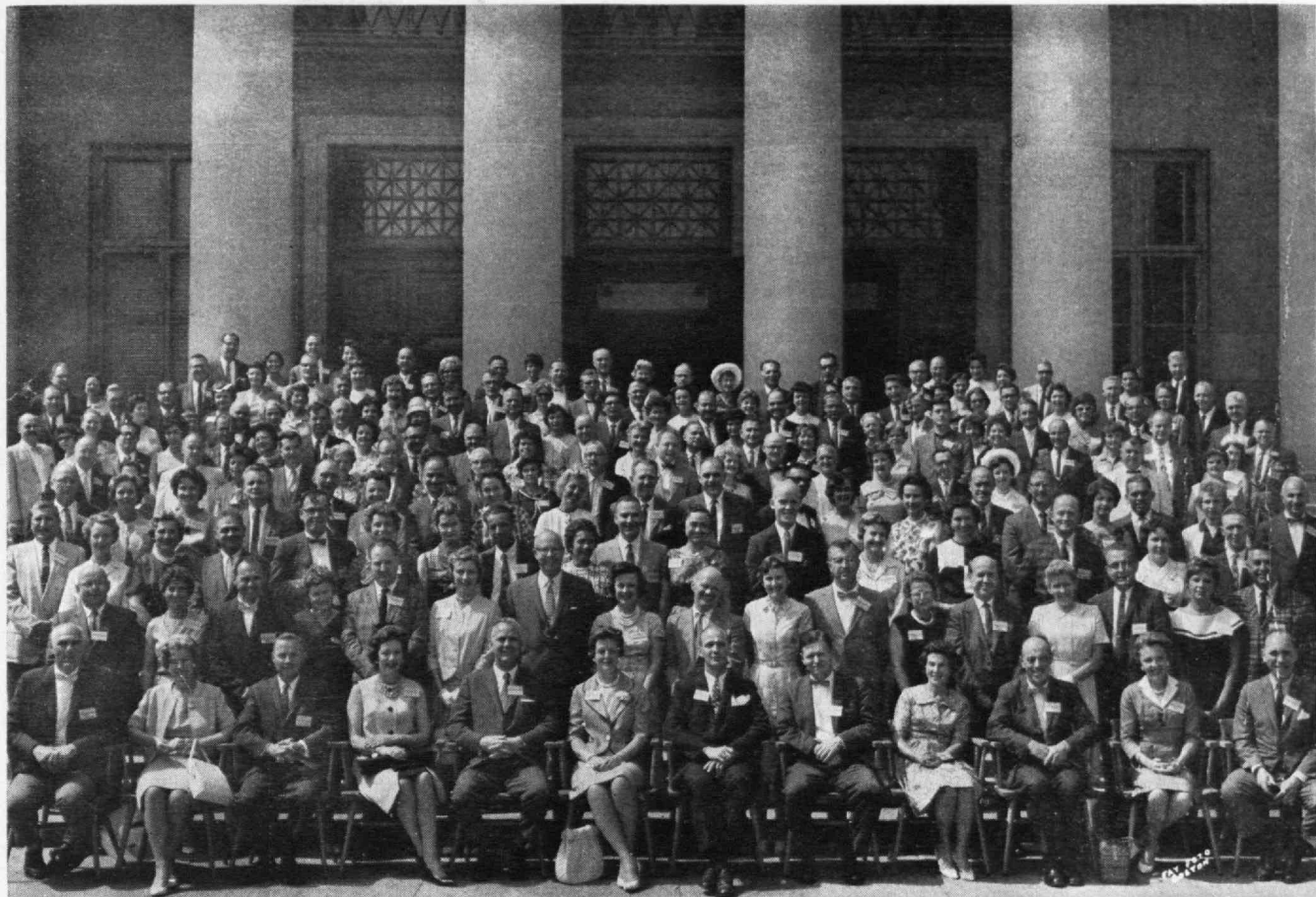
Henry Runkel's new address is 4005 Piedmont Drive, S.E., Huntsville, Ala.—a long way from Seattle. . . . Other promotions and honors include appointment of **Robert F. Johnson** as manager of the New England Office of Cooper Alloy Corporation. He will be responsible for sales and technical services of cast products in the six New England states. . . . **Hans J. Lang**, who received a graduate

degree with '36, has been appointed manager of the newly created Engineering Administration Department of the Lummus Company, designers, engineers and constructors of major processing plants throughout the world. He will be responsible for administration and co-ordination of international projects. . . . **Charles W. Mueller**, another graduate member of our class, shared with two other members of the Technical Staff, Electronic Research Laboratories, of RCA in Princeton, the 1962 David Sarnoff Outstanding Team Award in Science for "team performance in conceiving and developing devices, circuits, and memories for kilomegacycle computers." The awards were established by RCA in 1956.—**Alice H. Kimball**, Secretary, 20 Everett Avenue, Winchester, Mass.

'37

James D. McLean assumed his new post as president and chief executive officer of Highway Trailer Industries, Inc., on August 1. Jim was chairman of Struthers Scientific and International Corporation, and will remain a director. **Jim**, Margery and their four children live in Los Angeles, Calif. . . . From Syosset, N.Y., we hear that **Dick Surbeck** has been named to the newly created post of director, international marketing for the Defense Products Division of Fairchild Camera and Instrument Corporation. His appointment coincides with expanding overseas sales of the division's electronic, optical and mechanical equipment and increased representation in a number of foreign countries. Previous to joining Fairchild's Defense Products Division in 1960 as executive assistant to the general manager, he served in an executive capacity with the Itek Corporation, Port Washington, Long Island, N. Y., is where Dick, Irene and their two children live. . . . The Class of '37 was represented at the OEG 20th Anniversary Conference (Operations Evaluation Group of the Navy Department), held in Washington, D.C., by General **James McCormack**, who spoke at the dinner on May 15.

Joe Heal has been having a busy summer, as a result of his involvement with the plans and execution of events for our 25th Reunion, daughter Joyce's graduation from the Connecticut College for Women in June, and then her marriage later this summer. Joe writes that he and Marion enjoyed a visit one weekend this summer from Marian Pitkin. Marian wasn't able to join husband **John Pitkin** at our 25th Reunion. To my knowledge, John, who is working in Western Germany, came the greatest distance to attend our 25th. . . . The **David J. Whitneys** moved from Hartford, Conn., to Concord, N.H., when Dave was named chief ultrasonic engineer for the Richard D. Brew and Company. Prior to joining the Brew Company, Dave was chief engineer with the Anderson Laboratories in Hartford. . . . **David Richardson**, internationally recognized authority on diffraction gratings, has been promoted to staff engineer in the Scientific Instrument Di-



The Class of 1937 is shown here at its 25th Reunion held on the M.I.T. campus in June. The Class broke the record for number attending a 25th reunion and presented the Institute with the largest 25th year reunion gift to date.

vision of Bausch & Lomb, Inc. The move, while allowing Richardson to maintain his world-wide engineering contacts, "will provide additional time for him to broaden his activities in the precision ruling field as well as in the spectroscopic instrument area." . . . To those members of our class who might be interested in obtaining a copy (or an extra copy) of our 25th Reunion Class Book, please forward \$4.00, which will cover the cost of the book and postage, to your secretary. —**Robert H. Thorson**, Secretary, 506 Riverside Avenue, Medford, Mass.; **Professor S. Curtis Powell**, Assistant Secretary, Room 5-323, M.I.T., Cambridge 39, Mass.; **Jerome Salny**, Assistant Secretary, Egbert Hill, Morristown, N. J.

'38

We have an announcement that **Joe d'Angelo** has been appointed vice-president-operations control for **Reichhold Chemicals, Inc.** In this position he will be working with the company's executive committee at headquarters in White Plains. Joe has been with Reichhold since graduation. . . . **Vernon G. Lippitt** has left a position as economist for the General Electric Company to become an associate professor of business administration at the University of Rochester. . . . I should like to quote extensively from a letter recently received from **Bob Flynn**. I'd appreciate more such letters

from the class: "I have been one of the silent ones by not having contributed to the class notes. Now, with the complete change of living from corporate existence for more than 20 years, to private law practice, I will try to make some contribution from time to time. . . . After leaving the Institute, a few months were spent with the Cary Maple Sugar Company at St. Johnsbury, Vt., analysing maple sugar for lead. Thereafter, I went on to Socony Vacuum's Research Laboratory at Paulsboro, N. J., where a year-and-a-half was spent on research with lubricant additives and hydrocarbon conversions. The next event was a transfer to Socony's Patent Department in New York, where some good training was obtained. In the summer of 1946, I left to join Devoe & Reynolds Paint Company in Louisville, Ky., in the capacity of patent agent, and assisted the manager of the laboratories. This proved to be an education, but at the start of 1948, I returned to Socony and remained until last week.

"In the interim I had the good fortune of marrying a splendid girl, Joan, who is an artist; and have had the further good fortune of Steven, 9½; Audrey, 7; and Scott, 22 months. Another event of note, although full of drudgery, was a period of four years of law night school at New York University. During the years at law school, I met many splendid people, two of whom have joined me in the new law practice. One is Louis E. Marn, a chemical engineer from the Illinois Institute of Technology, and recently head of the

Lummus Company patent work; the other is James C. Jangarathis, an electrical engineer from the University of Illinois, and recently of the Western Electric Company patent staff. . . . This, then, is the transition from corporate life to private enterprise."—**David E. Acker**, Secretary, Arthur D. Little, Inc., 1424 Fourth Street, Santa Monica, Calif.

'39

Amplifying the short item included in last month's news, here is further information on the death of Dr. **Harry Wexler**, XVI-G, who had served since 1955 as director of research of the United States Weather Bureau in Washington. The source is the August 13 edition of the Herald News, of Fall River, Mass., Dr. Wexler's native city. Wexler graduated from Durfee High School in Fall River in 1928, and took advance work at Harvard and then at M.I.T., getting his doctorate there in '39, thereby affiliating with our class. His achievements in weather research and practical applications were virtually countless, having gained him many awards and much recognition. Last year, for example, he was given an award as one of the 10 top career employees in government. Here are some examples: First weatherman to make a flight into the eye of a hurricane, chief U. S. scientist at the Antarctic during the International Geophysical Year,

member of the U. S. Delegation at the Atoms for Peace Conference in Geneva, 1955, chairman of the committee on the effects of atomic radiation of the National Academy of Sciences, and councillor of the American Meteorological Society. Dr. Wexler's wife, Hannah, and two daughters, Susan and Libby, live in Falls Church, Va.

Following are notes from newspaper clippings about other '39ers. Some of the items are several months old; if any later changes have occurred, please let me know for subsequent updating! . . . **Julius A. Lucas**, X-B, veteran Detroit sales representative for Goodyear, has been named manager of the company's engineered automotive products department, in Akron. Lucas joined Goodyear as an engineering trainee in '39. . . . **John C. L. Chatten**, X, formerly senior engineer at the Hanford Atomic Works, resigned from GE to become assistant manager for industrial support with Pan-Am Airways, which holds the prime contract to operate and maintain all facilities at Cape Canaveral, including the missile complexes and launching pads. Mr. and Mrs. Chatten have two children: Benjamin, 7, and Candace, 9. . . . **Robert W. Pratt**, II-A, a project engineer in charge of JT-3D turbo-fan engines currently in service, was recently appointed as assistant chief engineer-production, at Pratt and Whitney Aircraft, Hartford, Conn. He will direct engineering activities for military and commercial versions of J-57, JT-3D, and JT-12 engines. . . . **Raymond Wexler**, XVI, and **Roland J. Boucher**, XVI, were on the program of the American Meteorological Society meeting in September, with a paper entitled "An Approach To Automated Precipitation Forecasting Utilizing Digitized Radar PPI Data." . . . Here's my annual plea: please send in news of yourself or of others. Very little "feedback" occurs except for helpful clippings supplied from the Alumni Office. Those first-hand letters are most welcome, and make this volunteer job of class secretary easier.—**Oswald Stewart**, Secretary, 31 Birch Road, Darien, Conn.

'40

Your secretary is indebted to Carole A. Clarke, Secretary of Class of 1921, for the following item which appeared in the Newark, N.J., Evening News of June 19, 1962: "**John H. McGuigan** of 69 Prospect Street died Sunday of a heart attack while on a fishing trip in Bridgton, Maine. He was 43. A graduate of Massachusetts Institute of Technology, Mr. McGuigan was employed as an electrical engineer on the research staff of Bell Telephone Laboratories for 22 years. Born in Evanston, Ill., he had lived in Summit for 11 years. He was a member of Eta Kappa Nu, an engineering fraternity, and a number of other professional engineering societies. He leaves his wife, the former Patricia Fehr; two sons, Thomas Carr and David Lisone, and a daughter, Susan Jane, and his parents, Dr. and Mrs. Hugh A. McGuigan."

Guido de Rossi, who received his master's degree and later went on to Law School at Georgetown University and subsequently the Universidad de San Marcos, Lima, Peru, is now in the general practice of law as a partner in the firm of Boesen, Rada, Merino and Rossi in Lima. . . . **Claude Shannon** received an honorary doctor of science degree from Princeton last June in view of his accomplishments as a mathematician and engineer. . . . Lieutenant Colonel **John A. Vanderpoel** was awarded the U.S. Air Force Commendation Medal in recognition of his meritorious achievement as a special project officer during project "Bamboo Tree." John is stationed at Hanscom Field in Massachusetts, and lives in Litchfield, Conn., with his wife, Joan, and two children. . . . **Conrad Schuerch**, who is chairman of the Syracuse University Department of Forest Chemistry, has been awarded a grant of \$48,500 for a five-year research project on the "Reaction of Ozone with Plant Tissue." . . . Brigadier General **David B. Parker** is the new Army Transportation Material Commander in St. Louis, Mo. . . . **Divo L. Tonti**, who is executive director of the Garden State Parkway in New Jersey, was made a knight in the Order of Merit of the Republic of Italy. The ceremonies took place at the Italian consulate in New York City last August. Divo acted as consultant on the construction of the Milan-Naples highway during 1957-1962.—**Alvin Gutttag**, Secretary, Cushman, Darby and Cushman, American Security Building, Washington 5, D.C.; **Samuel A. Goldblith**, Assistant Secretary, Department of Food Technology, M.I.T., Cambridge 39, Mass.

'41

Figuring prominently in the news again is **Howard J. Samuels** who built a \$50,000,000-gross-sale business from a start in a rented schoolhouse in Canandaigua, N. Y. Throughout the summer months Howie put on a hard campaign seeking the Democratic nomination for governor of the state of New York. While this is the first time he has run for public office, he does hold such government posts as membership on the National Policy Committee for Pockets of Poverty and an appointment by Governor Harriman to his Business Advisory Committee. Howie classes himself as a conservative financially and a progressive on human issues and lines himself up with President Kennedy in opposition to federal aid to parochial schools. While he lost the race in the primaries to Robert Morgenthau, we hope that the defeat will not deter him from seeking public office in future elections, because men of his caliber are needed to provide the leadership essential to good government. Even before the outcome of the primaries, Howie again made the news headlines in a disclosure of an unusual development, believed to be the first of its kind attempted in the nation, and again evidenced his combined business and civic acumen. He disclosed plans for

a novel multi-million dollar community development, which will provide special, low-cost facilities for the elderly as well as housing for other age groups. It will be a privately financed development expected to house about 350 elderly persons and upwards of 475 younger residents and is estimated at \$5-\$6 million. The site of the development, to be called Bristol Heights, is a 95-acre tract, known as the Brigham Hall property. The land, located just half a mile from downtown Canandaigua, is owned by Howie and his wife, Barbara. One of the novel features of the project is that it integrates complete housing, nursing and recreational facilities for the elderly within a community development with younger people. Another is that the project incorporates all levels of care for the elderly in a single development. Howie described the concept as one that "provides a life of dignity, security and activity for the aged." He said facilities and surroundings of the project will give senior citizens "a sense of purpose, belonging and well-being, in addition to physical care." For the elderly, the project will provide a virtually self-sufficient neighborhood of individual dwelling units, communal living facilities and a nursing home. Persons 62 years of age and older, regardless of race, creed or national origin, will be eligible to reside in the facilities, and living units for the elderly. The aged will pay modest rentals—expected to be well below charges for comparable facilities and housing—to a private, non-profit corporation which will operate the development. The project will include recreation areas, a small shopping center, one or more churches and approximately 60 residential lots to be developed by private builders for younger people. The eastern corner of the tract has been earmarked for education, and it is possible a private or community college will be located there. All levels of care—ranging from individual dwellings for aged couples in good health to communal living facilities for those in need of housekeeping assistance, to complete care in a nursing home—are planned for the development for the elderly. This means that senior citizens will not have to leave the "community" and be separated from friends and relatives in later years when they may require housekeeping assistance or nursing care. Construction is scheduled to begin this fall and to be completed in about three years. Samuels said a staff, including an administrator, occupational and medical therapists and housekeeping personnel, will be assembled as construction proceeds. Eventually, a complete staff, representing all skills employed in working with the aged, will be available in the community development.

Edwin G. Kispert has been appointed a proposition manager at the Babcock and Wilcox Company's boiler division headquarters in Barberton, Ohio. He joined B&W in 1946 as a student engineer in the company's New York City offices. In 1949 Kispert was transferred to Chicago as a service engineer, and in 1950 he was named a proposition engineer in B&W's sales department in New

York City. He was made a staff engineer in 1955, and in 1960 was appointed section manager, utility products, in **Barnberton**. Born in Fall River, Mass., he is married to the former Jean Dennett of Watertown, Mass. They have two sons, David M. and Peter E., and reside at 7563 Red Fox Trail, Hudson, Ohio. . . . **John W. Meier**, chief engineer of the electron beam department of Hamilton Standard Division of United Aircraft Corporation in Windsor Locks, Conn., was the guest speaker at the fall meeting of the Springfield chapter of the American Society for Metals. John joined Hamilton Standard in 1946 as a senior metallurgist and in 1955 accepted a position as vice-president of Klock Corporation. He rejoined Hamilton Standard in 1956 as chief materials engineer and was named to his present post in 1960. He is the author of several technical articles on electron beam welding and cutting and is a registered professional engineer in Connecticut. . . . **Donald D. Scarff**, has been promoted to general manager of General Electric Company's lamp division headquarters at Nela Park, Cleveland. He will be responsible for six departments which manufacture and distribute a complete line of light bulbs for use in homes, industry and commerce, as well as a line of metal components and glass for industry and a line of outdoor lighting equipment. Don is a native of Pittsburgh. He joined G.E. in 1941 as a student engineer at Schenectady, N.Y. In 1946 he moved to Boston where he was engaged in sales work for the New England Sales District of the lamp division.

Walter Turansky has become vice-president and treasurer of a newly formed development and construction organization known as Pomer Associates, Inc., with offices at 740 Main Street, West Hartford, Conn. Walter has been actively engaged in engineering construction since receiving his M.I.T. degree in civil engineering in 1941 and is a registered professional engineer in Connecticut and New York. He served with the Army Corps of Engineers in Africa and Europe during World War I and received the Army Commendation Medal for work performed as a military government public works officer in Linz, Austria, during the rehabilitation of that city in 1945. During the Korean conflict, he was recalled to active duty and was appointed assistant professor of military science and tactics at Polytechnic Institute of Brooklyn, where he taught design of roads, bridges, airfields and utilities. He resides with his wife and son at 112 Selden Hill Drive, West Hartford, Conn.

. . . **Charles H. Corliss**, with an associate at the National Bureau of Standards in Washington, has derived approximately 25,000 experimental transition probabilities (gA), or oscillator strengths (gf), for spectral lines of 70 elements to thereby increase the number of known transition probabilities for these elements by a factor of 10. The wavelength range of the lines included in the study is from 2,000 to 9,000 Å. Information on this may be obtained by those interested from Technical News, published by the U.S. Department of Commerce, National Bureau

of Standards in Washington. The particular article is entitled "Experimental Transition Probabilities for Spectral Lines of 70 Elements." . . . Please keep the news items active by immediately sending them to one of the secretaries.—**Walter J. Kreske**, Secretary, 53 State Street, Boston 9, Mass.; **Henry Avery**, Assistant Secretary, 169 Mohawk Drive, Pittsburgh 28, Pa.; **Everett Ackerson**, Assistant Secretary, 16 Vernon Street, South Braintree 85, Mass.

'42

Someone warned me when I resumed this job that the notes due on October 15 would be the most difficult to write since I would not as yet have any feedback from you. Whoever told me this was absolutely right, so this month I must, with one exception, resort to clippings and press releases for my information. . . . The exception is a letter to **Lou Rosenblum** from **Alan B. MacNee**, on leave from the University of Michigan, written from Sweden where he was a guest professor at the Chalmers Tekniska Hogskola. He gave two lectures a week, one to third-year students on electronic circuits and one on computer technology to fourth-year students. He comments that "because of the pressures of increasing students, the only way many universities in Europe can increase their permanent staffs, because of the professorship system, is to create new professorships which, in turn, means dividing fields, in this case electrical engineering, into thinner and thinner slices—quite the opposite of the trend in the U.S." He and his wife and four children, after leaving Sweden, planned to travel to Italy and then back to the U.S. in easy stages. . . .

Irv Fagerson, who received his doctor of science degree at the University of Massachusetts, has made a distinguished career for himself at that school in the Food Technology Department. He is known internationally for his work in gas chromatography, a method of determining off-flavors and spoilage of foods by analysis of food vapors. He is the recipient of one of the largest individual grants ever received at the college—over \$100,000 from the U.S. Public Health Service to study the heat breakdown of eatable fats. He is very much concerned with the role of fat in diet and its relation to disease. Irv has certainly become a distinguished scientist, but many of us will always remember him in his less inhibited days when he was a resident of the first floor of Wood.

I have a clipping which tells about the issuance of a license by the Small Business Administration to Polytechnic Capital Corporation to operate as an S.B.I.C. I suspect that some of you may know that **Al Goldis** is president of this corporation, **Milt Platt**, Vice-president of Fabric Research Laboratories, is an officer, and **Bill Dennen**, associate professor of geology at M.I.T. is a technical adviser. . . . Finally some recent appointments—and some not so recent. **Robert A. Batson**, President and Treasurer of C. A.

Batson Company, has been made a director of the Associated General Contractors of Massachusetts. . . . **Ken Leghorn** has been appointed vice-president of East Ohio Gas Company. He formerly was with the American Can Company and Photostat Corporation. . . . **Arnold C. Fields** has assumed full-time responsibility as product development manager of Joseph Kaye and Company, . . . **Chuck Raynsford** is now engineering and research manager for the Paramus plant of A. C. F. Electronics. . . . **Henry Brightman** has been elected president of the L. J. Wing Manufacturing Company of Linden, N.J. The company is a division of Aero-Flow Dynamics, Inc. . . . Finally, **Harry Knox** is now the director of commercial development of the Kordite Company, a division of National Distillers and Chemical Corporation. . . . Let me wish you all the season's greetings and hope that each of you will have time to drop me a few lines in the year ahead. Should you be visiting Boston, drop into my office.—**Jack Sheetz**, Secretary, Room 3-342, M.I.T., Cambridge 39, Mass.

'43

Kenneth L. Warden, Jr., of Lexington, Mass. has been appointed Reunion Chairman for our grand and glorious 20th, destined to take place at the Mayflower Hotel in Plymouth, from June 7 through 9, 1963. By the time these notes reach you, the first reunion mailing will be on its way with the details of the affair. Our class is very fortunate to have Ken as our chairman; he served on the committees for the past two reunions and has always been active in class affairs. . . . **Edmund R. Swanberg**, a resident of New York City, has been admitted to the brokerage firm of Scutter, Stevens and Clark as a general partner. . . . **Robert B. Handelman** was recently named divisional vice-president of General Precision Aerospace's Kearfott Division. A resident of Short Hills, N.J., where he lives with his wife Eileen at 43 Twin Oaks Road, Bob has been with Kearfott since 1947. He was formerly general manager of their electronics and systems division.

. . . **Morton J. Goodfriend** was appointed manager of marketing planning for Continental Copper and Steel Industries, Inc. of New York. This company is a major producer of insulated wire and cable, building and industrial screening, marine lifesaving equipment, tool steels, factory-assembled buildings and rotary heat exchangers. . . . We hope to keep you well posted on the progress of our reunion and your secretary would like to hear from you between now and next June with news for the notes.—**Richard M. Feingold**, Secretary, 10 North Main Street, West Hartford 7, Conn.

2-'44

This month I have a number of clippings, and one very nice letter. The first clipping reports that **Jim Mavor**, XIII,

has been active in the design of "Aluminaute," an oceanographic research submarine. He has been doing this work at Woods Hole Oceanographic Institution at Woods Hole. . . . The clipping from "Aerospace Engineering" reports on a paper co-authored by **Jim Angell, VI**, entitled "Reliable, Trainable Networks for Computing and Control." Fortunately the magazine gave a more complete explanation of the paper as follows: "A new type of logic, adaptive logic, is being devised which promises to play a significant role in the future development of computers. In a sense, such systems are inherently reliable. They can adapt to their own internal failures. Systems containing adaptive vote-takers are bridges between conventional fixed-logic systems and systems adaptive 'from the ground up.'" Jim is a member of the faculty of Stanford University in California and has been associated for the last two years with its Engineering Department. . . . A note in the Baltimore Sun indicates that **Melvin Becker, II**, has been named superintendent of the Bethlehem Steel Company Sparrows Point plant. Mel has been with Bethlehem since leaving the Army, and has managed to stay at the Sparrows Point plant during all of this time. I guess there are some members of the class who do manage to stay in one place geographically!

It appears another member of the class has cracked the international operations field, and this is **Dewey Nelson, V**. He has just been appointed vice-president of FMC International, a division of FMC Corporation. This company is a diversified producer of machinery products, industrial, agricultural and special chemical and defense materiel. Dewey will direct all exporting and foreign manufacturing as well as licensing of FMC chemicals from his New York City headquarters. Dewey has been with FMC since leaving the service in 1947. He will no doubt have notes to compare with **Bob Benedict, XIII**, and **Bob Cooper-Smith, XV**, both of whom are located in New York. . . . An abstract received from the IBM Thomas J. Watson Research Center, Yorktown, N.Y., reports on a paper given by **Robert Gunther-Mohr, V**, for the International Federation for Information Processing, Munich, Germany. Bob's topic was "Prospects for Semiconductor Digital Logic Components—The Importance of Controlled Tolerance." I am sorry that I cannot give you a more detailed account of the paper, but I find that in order to do it justice it would be necessary for me to quote a fairly large amount of the abstract. Anyone desiring more information, I'm sure, can get it from Bob.

A recent news release, indicates that **Dorr-Oliver, Inc.**, of Stamford, Conn., has appointed **Dick Soderberg, Jr., XVI**, vice-president of the corporation. His office is concerned with the expansion of the company's engineering technology both within the U. S. and abroad. Dick is returning to Fairfield County from Houston, Texas, where he was executive staff assistant with Schlumberger, Ltd. I say returning to Fairfield County, as he lived in this area prior to going to Texas.

I tried to call Dick on the phone, but he was in Europe. I was advised, however, that he has moved to New Canaan, Conn., and I expect to get together with him for lunch and find out what has been going on with the members of the class around Houston. . . . An article in the recent Bell Laboratories Record entitled "TWX Goes Dial" was authored by **Ed Tyberghein, VI**. Ed has been with Bell Laboratories as a member of the Data Systems Engineering Center since August, 1960. He is primarily concerned with systems engineering. . . . —**P. M. Heilman**, Secretary, 30 Ellery Lane, Westport, Conn.

'46

With the exception of a few changes of address we have received no news for inclusion here since the previous notes were written. In years past we have sent out questionnaires but the response has been less than thrilling, approximately 5 per cent. No questionnaires are scheduled this year, so let's try another approach: Right now, before you read the rest of this column, go to your desk, pull out one blank sheet of paper, write on it your name, address, wife's name, children's names and ages, your present job title, company, and perhaps a word or two of description of your responsibilities, your extra-curricular activities (civic, social, charitable, etc.), and perhaps a few other items about recent trips, articles presented or published, a new house abuilding, or whatever. The result of this two minutes' worth of your time will no doubt look uninteresting to you, but I can assure you that it will be interesting to your M.I.T. friends of 1943-1946 who have lost track of you since then. I hope each reader of this column has occasionally found something that reminded him of old friends and answered his curiosity about what happened to them. If not, my efforts have been wasted.

The few changes of address mentioned above are: **David G. Black, Jr.**, Hartford Pike, North Scituate, R.I.; **William J. Rapoport**, 515 So. Crescent Ave., Park Ridge, Ill.; **Robert G. Striker**, 31 Anchorage Rd., Port Washington, N.Y.; **John M. Dudley**, 55 Harmony Lane, Walnut Creek, Calif.; **Arthur Schiff**, PO Box 781, Perth Amboy, N.J.; Dr. **John L. Bateman**, Brookhaven National Lab., Medical Research Center, Upton, N.Y.; Lieutenant Commander **Lawrence G. Body**, Staff, COMNAVATRPAC, Box 1230, Naval Air, North Island, San Diego 35, Calif., and Professor **Edward H. Bowman**, St. George St., Duxbury, Mass. Don't forget to send that "info" to—**John A. Maynard**, Secretary, 25 Pheasant Lane, North Oaks, St. Paul 10, Minn.

'49

This year it appears that the monthly preparation of Class News is going to have to be sandwiched between trips to merrie old England (on October 14, I leave on

my seventh trip since mid-March). Here is the now-latest news plus my heartiest wishes to all for a Merry Christmas and a Happy and Prosperous New Year. . . . **Henry S. Rowen, XV**, made Time magazine as a "Pentagon Whiz Kid" (August 3, 1962). He is Deputy Assistant Secretary of Defense for policy planning and national security affairs, having reached the Department of Defense via the Rand Corporation and studies at Oxford after graduating from M.I.T. . . . **Harold Ingraham, XVIII**, has been appointed assistant actuary at Massachusetts Mutual Life Insurance. He has been advancing steadily with them since 1950. . . . Colonel **Peter C. Hyzer, S.M. I**, relieved Brigadier General Seymour Potter as division engineer for the New England division of the Army Corps of Engineers. A West Point graduate, he has seen some combat since his M.I.T. days. He holds the Silver Star and Legion of Merit for gallantry in action and exceptionally meritorious conduct in the early phases of the Korean War. Since July 1960, Colonel Hyzer has been in Taiwan as Chief of the Production Advisory Team, MAAG, China. . . . **Lloyd A. Haynes, I**, has been appointed systems and procedures manager for the United States Instrument Corporation, Charlottesville, Va., a producer of telecommunications systems and equipment. He has been a senior management engineer with Ling-Temco-Vought in Dallas, Texas since 1956, following a tour as director of the European office of Consultants, Inc., a Boston-based management consulting firm. For U.S.I., Mr. Haynes will plan the introduction of an electronic data processing unit, assist in developing new procedures for inventory control, and be responsible for co-ordination of procedures used by the engineering, manufacturing, marketing and financial divisions. . . . **Horton R. Shaw, XIII**, has been appointed as counsel to the New York State Division of Housing and Community Renewal. The press release provides the following background information: "an LL.B. degree from the New York University School of Law in 1955 . . . member of the corporate legal department of the M. W. Kellogg Company since July, 1958 . . . Mr. Shaw is 35 years old, married, and the father of two children." . . . From Arizona State University, we learn that **Peter K. Stein, II and XV, S.M., II**, Associate Professor of Engineering, is the director of the one-week 1963 short course "How to Obtain Valid Data on Purpose."

Here are some changes of address that piqued my fancy for one reason or another: Reverend **Lloyd P. Jonas, X**, from Gothenburg, Nebr., to Conservative Baptist Bible Conference, Freehold, N.Y.; **Thomas J. Lamphier, I**, from St. Paul, Minn., to Klamath Falls, Ore.; **Richard T. Noe, II**, from Montreal, Que., to Ford Motor Company, Styling Center, Dearborn, Mich.; **Frank A. Dinneen, Jr., XII-B**, from Pico River, Calif., to Plainfield, N. J.; Dr. **Alexander D. MacDonald, Ph.D., VIII**, from Palo Alto, Calif., to Halifax, Nova Scotia; Professor **Thomas L. Hilton, XIV**, from Pittsburgh, Pa., to Princeton, N. J.; Dr. **Richard K. Rich-**

ards, Ph.D., VIII from Wappings Falls, N. Y., to Ames, Iowa; Professor **Lee F. Hodgden**, M.S., IV-A, from Eugene, Ore., to Cornell University, College of Architecture, Ithaca, N. Y.—**Frank T. Hulswit**, Secretary, 14 Nadine Road, Saxonville, Mass.

'50

Merry Christmas! This is an excellent time for us to review some of our basic principles . . . some of our basic values . . . some of our basic objectives. At the time that we celebrate the birth of Christ, we might do well to look at ourselves from a spiritual (yet objective) point of view. Certainly many of us are happy for the material growth we've experienced since '50. But what of our spiritual growth? I, for one, must admit that it has had a much slower rate even though each day I realize that material growth is not the basis for my ultimate goals, for my ultimate values. This Christmas I'm going to try to not only present my family and friends with the usual gifts, but I'm also going to present them with some of my spiritual feelings and thoughts that I think might make them really merry. Won't you join me in thoughtful prayer during the holidays for the good fortune of M.I.T. and the good health of our classmates?

Jim Geiser has been named assistant to the vice-president-engineering by West Penn Power Company. Headquartered at the utility's general office at Cabin Hill, Greensburg, Ed had been assistant manager of the research and development department. Ed joined West Penn in 1950. He has served on the engineering staff at Springdale Power Station, and was assistant to the chief results engineer at the general office, and staff engineer. . . . **Jim R. Ullom** has become manager of the Applied Optics Department of Itek Corporation's Lexington Laboratories. Jim has been with Itek since 1960 as staff engineer in charge of engineering development and project co-ordination of large optical Cameras, Inc., as a director of quality control and as a design engineer. . . . **Bill Flye**, City Traffic Engineer in Riverside, Calif., for the last six years, has accepted a job as first deputy traffic engineer here in New York City.

Ralph H. Berbmann is resigning his post with the International Union to accept a United Nations agency staff position in Geneva, Switzerland. Ralph left URW the end of August to become deputy chief of the Industrial Workers' Division of the International Labor office, a United Nations specialized agency. Ralph and his wife and four children will make their home in Geneva. . . . **Larry Gould** has been appointed executive vice-president and general manager of the Microwave Associates, Inc. of Burlington. A vice-president of the company since 1959, Larry has held the position of technical director. Larry joined Microwave Associates in 1953 as a research physicist. He presently serves as a con-

sultant to the Department of Defense.

Now I have some address changes you might want to note: **Eugene T. Fleischhauer**, 1612 Inglewood Drive, Hessian Hills, Charlottesville, Va.; **William D. Flye**, 47 Glen Cove Drive, Glen Head, Long Island, N. Y.; **Howard K. Graves**, 21 White Oak Lane, Fairport, N.Y.; **Mrs. James K. Herold**, 2440 20th Street, N.W., Washington 9, D. C.; Lieutenant Colonel **Milton S. Hochmuth**, Industrial College of Armed Forces, Fort Leslie McNair, Washington 25, D. C.; **Pierre J. J. Kennedy**, 19 Bancroft Rd., Rockville, Conn.; **Eduardo Prado, Jr.**, IBRAPE S/A, Caixa Postal 7494, Sao Paulo, Brazil; **Robert W. Sandstedt**, 116 Hampton Way, Merrick, N. Y.; **James A. Drobile**, 401 Audubon Avenue, Wayne, Pa.; **Frank G. Randall**, 374 Lincoln Avenue, Portsmouth, N.H.; Commander **Robert E. Adamson, Jr.**, 321 B Avenue, Coronado, Calif.; **Frederick R. Bentel**, 23 Frost Creek Drive, Lattingtown, Locust Valley, N. Y.; **Raymond N. Blair**, 724 Central Street, Menlo Park, Calif.; **Richard L. Bolin**, Sierra Fria 384, Mexico 10 DF Mexico; **John E. Brown**, 2455 Grosse Avenue, Santa Rosa, Calif.; **Charles E. Carr**, 16925 Kirkshire Drive, Birmingham, Mich.; **Leon E. Christiansen**, 3201 Troy Avenue, N.E., Roanoke, Va.; Commander **Thomas J. Christman**, Sp. 270, Director-Special Projects, Navy Department, Washington 25, D. C.; Dr. **Rui J. P. de Figueiredo**, Purdue University, Electric Engineering Building, West Lafayette, Ind.; **Charles W. Dickinson**, 696 Fayette Street, Cumberland, Md.; Dr. **Stuart W. Fenton**, 1571 Burton Avenue, St. Paul 8, Minn.; **Edwin L. Field**, 1 Patriots Drive, Lexington 73, Mass.; **Donald P. Gaver, Jr.**, 1637 Georgetown Place, Pittsburgh 35, Pa.; **Sebastian J. Gianni**, Stop 31, Moore Road, Long Beach, Michigan City, Ind.; Prof. **Howard B. Jenkins**, University of Minnesota, Institute of Technology, Department of Mathematics, Minneapolis 14, Minn.; Professor **Bob A. Jessup**, 22813 Gary Lane, St. Clair Shores, Mich.; **Richard G. Jones**, 1324 Edgewood Lane E., Northbrook, Ill.; **Robert M. Joyce**, 1109 Harrison, Venice, Calif.

John V. Killheffer, Jr., 1106 Elmwood Avenue, Evanston, Ill.; **Paul W. Kind**, 97 Somerset Avenue, Garden City, N.Y.; Professor **Bruce H. McCormick**, 2003 South Vine, Urbana, Ill.; **Gordon C. McCutchan**, 319 North Colorado Street, Midland, Texas; **Abraham Manevitz**, 30 Livoli Road, Framingham, Mass.; **John F. Nicholson**, 820 Heirtage Road, Riverton, N.J.; **Douglas S. Powell**, 29 West 87th Street, New York 24, N.Y.; **Richard T. Priestley**, 2690 Escondido Avenue, San Diego 23, Calif.; **George E. Reis**, 1812 Dorothy Street, N.E., Albuquerque, N.M.; **David J. Seymour**, 112-128th Street, Bellevue, Wash.; Dr. **Paul Slepian**, Rensselaer Polytechnic Institute, Department of Mathematics, Troy, N.Y.; Commander **Charles B. Swayne**, 1205 Aberdeen Street, Arlington 4, Va.; **Stefan J. Garvin**, Magnetic Metals Company, Hayes Avenue at 21st Street, Camden, N.J.; **Frederick F. Kaiser**, 207 Brooke Drive, Hampton, Va.; **Charles A. Magarian**, 13313 S.E. 43 Street, Bellevue,

Wash.; **William A. Price, 3rd.**, 3607 Florida, Houston 21, Texas; **Richard W. Schweizer**, 34 Holmes Terrace, Plymouth, Mass.; **Max D. Sorota**, 81 Adena Road, West Newton 65, Mass.; **David W. Wellington**, RFD #4, Concord, N.H.; **Robert Wong**, 20 Lowell Street, Burlington, Mass.; **Paul J. Ahearn**, 193 Dalton Road, Belmont 78, Mass.; **Robert E. Bagnall**, American Embassy, Political Section, APO 794, New York, N.Y.; **Wray D. Bentley, Jr.**, 318 3rd Place, Manhattan Beach, Calif.; **Eugene F. Biek**, 331 East Wisconsin Avenue, Neenah, Wis.; **Norman B. Champ, Jr.**, 22 Clermont Lane, Ladue 24, Mo.; **Daniel E. Flanders**, 4993 February Street, San Diego 10, Calif.—**Gabriel N. Stilian**, Secretary, American Management Association, 1515 Broadway, New York 36, N.Y.

'52

Winter is here already, and it must be the walks to the mailboxes are frozen for your secretary hasn't had too much in the way of news for a while. However, catching up on some odds and ends, we seem to have enough for a column. Wherever you are, and whatever you're doing, please write. . . . First news concerns me, myself: I'm now with Simplex Wire and Cable working on new applications for Simplex's new flexible pipe, used for transmission of bulk materials and liquids, especially underwater. Very exciting. . . . **Joseph F. Alibrandi**, who is plant manager of Raytheon Company, Lowell plant, has been appointed general campaign chairman of the United Fund of Greater Lowell. . . . Dr. **Walter Holyk** has been appointed assistant manager of exploration and chief geologist for the Texas Gulf Sulphur Company. . . . Dr. **Herbert P. Kagen**, Professor of Chemistry at the Detroit Institute of Technology, has been working on a compound which has possible uses in the treatment of cancer and has passed an initial screening phase by the Cancer Chemotherapy Division of the United States Health Service. . . . And **Charles L. Proctor** has been appointed chief industrial engineer at Rodney Metals, Inc. in the New Bedford area. . . . Captain **Brian G. Moore** has just returned from Elmendorf AFB, Alaska, and is currently at Tinker AFB, Okla., awaiting reassignment to a Systems Command Unit. . . . **Ralph J. Preiss** has delivered a paper at the International Federation for Information Processing in Munich describing a new computer language in logic design-data.

Seems as though we have a good many classmates making their careers with the Armed Forces including Captain **Michael D. Lubin**, USAF R & D in Japan, Lieutenant Colonel **Neely M. Swomley** at Headquarters 16th Signal Battalion in Europe as a battalion commander; Lieutenant **John K. Cammell**, who is a naval aviator and assistant CIC officer on the "U.S.S. Kitty Hawk" out of San Francisco; and **Daniel H. Lufkin**, who is in the Air Force and now a captain working on his "Licentiate" (Ph.D. to us) at the University of Stockholm, and who extends

kind invitations to any Alumni in the Stockholm area to get in touch through the U.S. Embassy. **Charles W. Richard, Jr.**, captain USAF and assistant professor of mathematics at the USAF Institute of Technology, is living in Dayton, Ohio. Lieutenant Colonel **Joseph A. Jansen** is an assistant liaison officer on the consulate staff at Hong Kong. . . . On the home front, **Duane A. Haugen** is with the Air Force Cambridge Research Labs as chief engineer of the Boundary Layer Processor Branch doing research in meteorology and turbulent diffusion. . . . **Howard K. Larson** is with NASA at Ames Research Center doing work on Boundary Layers and Aerodynamic Heating and Ablation and living in Saratoga, Calif. . . . **Norman Niederman** is with the Air Force Ballistic Systems Division as a project officer, ground equipment for Titan II, and living in Los Angeles. Norm mentions just returning from a wonderful two-week vacation in Japan. LCDR **Gerald G. Brown, Jr.** is with the Coast Guard at the Hull Section Headquarters, Merchant Marine Technical Branch, 8th C.G. District, working with hull structure, hull arrangements, and stability review of U.S. merchant vessels, and living in New Orleans, La. . . . Major **Eugene Sharkoff**, USA, an executive officer, R & D Division, Ordnance Corps in Alexandria, Va., manages the ordnance R & D Program.

John P. Ward is working for Raytheon as a design group leader working with analog and digital control systems for missile fire controls, and living in Marlboro, Mass. . . . **Edward D. Dickerman** is with Vanadium Corporation of America as senior metallurgist in Durango, Colo.; he mentions that **S. Parker Gay, Jr.** has just opened a geophysical consulting firm in Lima, Peru. . . . **Barnett Berliner** is the principal in Barnett B. Berliner, Architecture and City Planning in Brookline, Mass. . . . **Kenneth H. Bohlin** is with the Operations Evaluation Group, Navy Department, Washington, D.C. . . . **Steven M. Sussman** writes he has recently returned to New England after three years in Baltimore, Md., getting his doctor of engineering degree from Johns Hopkins University; he is now heading a group engaged in research on satellite communications. . . . **William H. Lane** is in Milwaukee, Wis., as a senior engineer in product design of Power Switchgear Assemblies for Allis Chalmers Manufacturing Company. . . . **John Gyulveszi** is president of Gilvesy Construction, Ltd., general contractors in Ontario, Canada. . . . **John J. Fritts** is in Ramsay, Mich., with White Pine Copper Company as senior staff geologist working with quality control for a 16,000-ton per day copper mine.

Arlyn W. Boekelheide is in Woodland Hills, Calif., with Packard Bell Electronics Corporation as an engineering specialist in electronic systems analysis, R & D. . . . **Ronald Y. Yoshida** is with the Marquardt Corporation, Van Nuys, Calif., as a senior research specialist in dynamic analysis of hydro-pneumatic control systems. . . . And **C. William Carson** is with Thompson-Ramo-Wooldridge, RW Division, Canoga Park, Calif., on their Tech-

nical Staff, and living on Topanga Beach Drive, Malibu, Calif.—**Dana M. Ferguson**, Secretary, 242 Great Road, Acton, Mass.

'53

After a month in the "boondocks" (. . . some call it the New Frontier, I guess), Brother **Wohl** reports that he came, he saw, he did not conquer—but then again, he has not been conquered either. The view is lovely here, though. I am on the fifth floor of the Commerce Department Building, and my window overlooks a park and a lovely white house with an iron rail fence around it. Thought that nice white home (which I understand was re-decorated recently and has rooms of basic colors, like red, green, and blue) would be a nice place to live, but there was no "For Rent" or "For Sale" sign out. However, some friends have assured me that it will be available to the right man and family in two years; others say it will be six years. Oh, well, such is life in Washington.

Now, the news: **Jim Howard** has just left Sanborn Company in Waltham, Mass., and has joined the Andrus-Peskin Corporation in Natick, Mass., as vice-president; he will be responsible for sales-engineering of test equipment manufactured by the company's principals in northern New England and in three New York state counties. . . . **Dave Berkowitz** has been named head of the Physics Sub-department of the MITRE Corporation's Computer and Display Development Department; he has been with MITRE since June, 1961, and before that was on the Technical Staff of Bell Telephone Laboratories. . . . **Robert T. Wallace, G.** has been promoted from technical director to vice-president for the Plastic Products Division of Owens-Illinois; he joined the Owens-Illinois research department in 1954 after serving as plant manager of coating resins for the Barrett-Plaskon Division of Allied Chemical Corporation. . . . **Brian Parker**—plus wife Sonia and six-months old daughter—are living in Puerto Rico, where Brian is consultant in criminalistics to the Department of Justice of the Commonwealth. At the moment, he is Forensic Science Associate to the First Inter-American Conference on Legal Medicine and Forensic Science, though generally he is responsible for scientific crime detection in cases requested by the Department of Justice. . . . **Herman Lake** presented a paper at the September conference of the American Meteorological Society which was entitled: "Some Problems Associated with the Remote Detection of Clear-Air Turbulence from Aircraft."—**Martin Wohl**, Secretary, 3724 Cumberland Street, N.W.: Washington 16, D.C.

'54

Even though it is now the middle of winter, and 18 months before the event, **Bob Anslow**, our president, sends word

that he has started preparations for our 10th Reunion, to be held in June, 1964. We will keep you informed of developments as they come along. In the meantime, it's not too early to start thinking about making arrangements to be on hand in Cambridge for the big affair. . . . **Dean Jacoby** sends along the information that **Bob Law** has been moved from New York to Chicago by his employer, Procter and Gamble. The last we heard, Bob was "busily training on a new and better job." . . . **Stan Hoff** has recently returned to civilian life after a hitch as supply officer for the 418th Engineer Brigade at Camp Drum, N.Y. He is now back on his job as a design engineer at Tech. Stan, his wife, and their five children live in Peabody, Mass. . . . **Dan Greenberger**, who spent some time as an assistant professor of physics at Ohio State University, is now professoring at the University of California, again in the Department of Physics.

When I arrived in Arlington, Va., last August for my annual two weeks' Army Reserve duty, I was assigned a desk immediately behind a familiar-looking head. Investigation revealed that the head belonged to **Ray Freeman**. Ray managed to avoid the Army for eight years while he acquired his Ph.D. in physics at Tech, but they finally got him, and now he is holding down essentially the same job I had for two years with Uncle Sam. They must have found out that Ray and I were lab partners as sophomores. Ray is still a bachelor, and does his share in supporting the Officers' Club at Arlington Hall. . . . Another familiar-looking head was preparing to leave the Washington area when I arrived. This one belonged to **Dick Hayes**. Dick as a captain in the Air Force, has recently been on duty with NASA Headquarters in Washington. Since early September, however, he has been a civilian employee of NASA, with a rank of GS-16 no less, in charge of a new NASA operation in Houston, Texas. Dick, his wife Ellin, and their two daughters have just settled into a newly acquired home in Houston, although he may return to Washington within a year, he says. . . . And that about does it this month. Take a moment during your holiday festivities to drop me a note about your own recent escapades. And Merry Christmas to one and all!—**Edwin G. Eigel, Jr.**, Secretary, 4945a Sutherland Avenue, St. Louis 9, Mo.

'55

We are still receiving answers from last year's questionnaires, and thank you all for the grand response. **Jack Gahran** is chief industrial engineer with John R. Evans Company in New Jersey. Jack and Joanne have 1 boy and 3 girls, all spaced exactly 1 year apart. . . . **Hal Stubing** was appointed a contact metallurgist with the Bethlehem Steel Company in Lackawanna, New York. . . . **Bill Lehmann** expects to receive the M.D. degree from Yale in June 1963. He was married in March to Gail Goodrich of North Haven, Conn. . . . **Don Brennan** has

been appointed president of Hudson Institute. This organization was recently set up to conduct policy studies in the area of national security. The Institute occupies an estate in Westchester County, New York and currently has a staff of 85. . . . **Sheldon Moll** co-authored a paper entitled "Electron Beam Microanalysis of Germanium Tunnel Diodes" in July 1962 of the IBM Journal. Shelly is with Advanced Metals Research Corporation in Somerville, Mass. . . . We received a fine letter from **Mike Halpern**. He had been in the construction business in Westchester County, N.Y., until last October when he was recalled to active duty. While at Fort Bragg, N.C., he became intrigued with the home building possibilities in the South. After a thorough study, and after his tour ended, Mike moved the family to Atlanta and set up business as the Halpern Company. He is building a group of 30 homes as a start and invites any of you in that area to be one of his first customers.—Co-Secretaries: **Mrs. J. H. Venarde**, 2401 Brae Road, Arden, Wilmington 3, Del.; **L. Dennis Shapiro**, 24 Concord Avenue, Cambridge, Mass.

'56

Greetings for the holiday season and do not forget my annual reminder to remember Tech on your gift list. . . . **Parvez Amin** is with Glaxo Labs in Karachi, Pakistan. . . . **Steve Conviser** is now technical representative for Linde's molecular sieves products in Houston, Texas. . . . From our medical contingent we hear that **Steve Cohen**, after completing Harvard Med, is now with the New Jersey Department of Health, Division of Preventable Diseases in Trenton. Dr. **McIver Edwards**, after finishing University of Pennsylvania Med, is now at Johns Hopkins in Baltimore. Dr. **Arthur Frank**, after graduating from NYU Med, is now at the Stanford Medical Center in Palo Alto. . . . **Bob Follett** is a systems engineer with IBM at the Federal Systems Division in Washington. **George Gorgias** is with Societ  Hellenique d'Exportation et Importations in Athens, Greece. . . . **Bill Layson** is now at the Lawrence Radiation Lab in Berkeley after two years at CERN in Geneva. His doctoral thesis was "Scattering Matrix for P-ion Nuclear Collisions." . . . Last year during a visit to the Faculty Club, I ran into **Ron Massa** who, after completing his doctorate, was quickly grabbed by USAF for Hanscom Field. . . . **Richard Mateles** is assistant professor of biochemical engineering at Tech. . . . **Si Moss** will receive his Ph.D. in metallurgy in February. Si also has a Ford Foundation post-doctoral grant. He and Peggy Benedict Moss (INSCOMM secretary) have two boys. . . . **Joe Schaeffer** received his Ph.D. in biophysics from the University of Rochester in June. . . . **Jerome Vielehr** is in Kanpur, India, as administrative officer of the Educational Services, Inc. contingent, teaching at the new Indian Institute of Technology. Nine universities are participating in supplying faculty for the new

school. . . . **Wolf Vieth** is assistant professor of chemical engineering at the American Cyanamid Practice School Station in New Jersey. . . . As a P.S. on your gift list please send information to your secretary.—**Bruce B. Bredehoff**, Secretary, 1094 Center Street, Newton Center 59, Mass.

'57

It was a real pleasure to get back to Tech this fall for the Fourth Alumni Officers' Conference. The changes being made in the curriculums and facilities are tremendous. Gary Dischel, Harry Duane, Ed Roberts, and Lavette Teague also participated in the two-day session. **Lavette Teague** has recently moved from Birmingham, Ala., to Raleigh, N. C., where he has joined Synergetics, Inc., a firm which specializes in the design of domes and structures involving unusual geometry. Two buildings for the 1964 World's Fair are being designed by Synergetics. . . . **Gary Dischel** gave me a lead on a story about **Harry Flagg** and his adventures in Hawaii. I'm chasing it down and hope to publish an exclusive next month. . . . From **Ed Roberts**, I received the results of the class poll. About 600 questionnaires were sent out; 192 were returned. Seventy per cent or 137 reported they were married. Within this group 35 per cent have no children; 35 per cent have one child; 24 per cent, two children; and 6 per cent, three or more. All were asked how many children they wanted with the following answers: 0 per cent—0; 1 per cent—1; 27 per cent—2; 35 per cent—3; 32 per cent—4; 5 per cent—5 or more. It is noteworthy that over half of those who answered that they desired five or more children were not married! Seventy-three per cent replied that they were satisfied with their job. The statistics on starting salaries are as follows: median starting salary was between \$5,500 and \$6,000; the maximum was \$15,000; only three out of 163 reported starting salaries in excess of \$10,000; 14 per cent (largely students and members of the armed services) had starting salaries of less than \$5,000. The median salary at present of those responding is between \$8,500 and \$9,000; 90 per cent are earning less than \$12,000; 80 per cent less than \$11,000. The maximum income reported was \$50,000. Only four out of 177 gave their income as being in excess of \$15,000 at present. The answers to the question on the peak salary expected were as follows: 70 per cent expected peak salaries of less than \$35,000, 13 per cent between \$35,000 and \$50,000; 10 per cent, between \$50,000 and \$100,000; and 7 per cent, in excess of \$100,000. The median expected peak salary was \$25,000. And finally, most noted they were happy!

Dan Borenstein brought me up to date on his activities in a recent note: "I graduated from the University of Colorado Medical School in Denver, Colo., in June of this year and at present am in the middle of my internship in internal medicine at the University of Kentucky Med-

ical Center, Lexington, Ky. I have accepted a first-year residency in psychiatry at the University of Colorado which will start in July of 1963. After that I will probably continue in psychiatry through residency and analytical training. I'm still single and will probably remain so for two or three more years." Dan also added that he is interested in hearing from his fraternity brothers and other friends at Tech. . . . Our class treasurer, **Alan May**, dropped me a card from Florence, Italy, in which he stated: "Am headed for the Riviera and anonymity." I trust he hasn't absconded with the class funds.—**Frederick L. Morefield, Jr.**, Secretary, 17 Everett Street, Cambridge 38, Mass.

'58

If you haven't returned your Reunion Planning Cards please do so. We need them. If you haven't gotten one, write and let me know whether you are definite, tentative, or negative on attending the reunion. . . . **Jim Benenson** reports that **Richie Johnson** has returned to the Union Theological Seminary this fall after spending the summer preaching in Enosburg Falls, Vt. . . . **Paul Ekberg**, although officially a member of the class of 1959, will be working with us on reunion and is now an engineer in the Linde Division of United Carbide. He and his wife, Nancy, spent the last two years in Sweden and England. They have one child, Brandy, and are expecting another. Since the last notes Jim has taken on a posh penthouse apartment on top of a 30-story building in the mid 70's on Central Park West. . . . **Toni Deutsch Schuman** visited here in September with her youngster, and we got the Western Reunion into high gear. News from Toni is that **Law Cohen** spent the summer traveling about Europe after participating in a geological expedition. He has finished his course work for his doctorate and will be writing his dissertation this year. . . . **Mike** and **Jean Brose** took a three-week business-vacation trip across country, traveling about 9,000 miles and camping out along the way. They spent four days with Toni and Ed and were almost convinced that L.A. is the place to live. Toni has a fine young girl but reports that "Ed vows she will not go to M.I.T. (one coed in the family is enough)."

Got a picture of **Walter Johnson's** very lovely bride, the former Janet Lou Campbell. They were married April 28 in South Weymouth and held a reception at the Faculty club. . . . **Jerome Levine** received his Ph.D. in mathematics from Princeton University after getting his M.A. there in 1960. . . . **Shmouel Winograd** hit the press again in the IBM Journal of R & D in July with a paper entitled "Multiple Input-Output Links In Computer Systems." . . . Here is some news about the graduate members. . . . **Jacek Jedruch**, after five years as a scientist with the Nuclear Design Section, Westinghouse Atomic Power Department in Pittsburgh, is on an educational leave of absence to work for a doc-

torate in nuclear engineering at the Pennsylvania State University. . . . **Samuel J. Davy** has just been promoted to the vice-presidency of National Corporation after having been the Director of Research.—**Cornelius Peterson**, Secretary, 4 Rambling Brook Road, Upper Saddle River, N.J.; **Antonia D. Schuman**, Western Associate, 22400 Napa Street, Canoga Park, Calif.; **Kenneth J. Auer**, Midwestern Associate, 12955 Harlon Avenue, Lakewood 7, Ohio; **William G. Daly, Jr.**, Eastern Associate, 125 White Street, Waverley, Mass.

'59

After a prolonged absence, your old secretary is back in the States and anxiously awaiting news from class members. Many thanks to **Al Oppenheim** for taking over these responsibilities while I was away. . . . The M.I.T. Club of New York holds monthly luncheons for each class. Let's see more of our Alumni in the New York area attending. The October luncheon had a special treat: **Jerry Schooler** announced that his wife had just given birth to a baby girl. Also attending that luncheon from the Class of '59 were **Roger Blaho** and **Mike Fine**. Roger, an architect, is a project manager for William Lescaze Company. Mike is attending the N.Y.U. Graduate School of Arts and Sciences. . . . Congratulations to **John Rainey**, who earned top honors at the University of Tulsa Graduate School last semester. John is working towards his M.S. in mathematics. . . . Several members of our class have been involved in military changes: **Younghill Kang** received his commission as a second lieutenant in the U.S. Air Force upon graduation from Officer Training School. **Bob Clark**, a first lieutenant with the Air Force has received a regular Air Force commission and is assigned to Grand Forks AFB, North Dakota. **Dave Weisberg** has completed the Signal Officer Orientation Course at Fort Gordon, Ga.; he is an Army second lieutenant.

On the academic scene, **Bob Hillman** received his bachelor of laws degree from Harvard and **Jan Northby** received his M.S. at Tech. I hope everyone else receiving advanced degrees will contact me as soon as possible. . . . In the business world, **Larry Boyd**, with his master's degree from Stanford Business School is working for Wheeler, Boyd and Ballin, insurance agents in Portland, Ore., and **Jim Hurley** is an assistant manager for Dewey and Almy Chemical Division of W. R. Grace and Company, in Chicago. . . . Congratulations to **Howie Ziff**, who has just passed the New York bar exam. . . . Hoping to hear from everyone shortly.—**Robert A. Muh**, Secretary, 8 Merri-vale Road, Great Neck, N.Y.

'61

Congratulations to **Robert Sanders**, XII, who earned himself the Pan-American Graduate Fellowship in Geophysics

for 1962-63. He is now at the Colorado School of Mines. The fellowship is supported by the Pan-American Petroleum Foundation, and is valued at \$2,300. . . . Word from the Cabot Corporation informs us that **Denis F. Healy, Jr., I**, has joined their CAB-XL group of the new Products Research Department as a field test engineer. Previously he'd been with Simpson, Gumpertz, and Heger. . . . My most regular correspondent, the U.S. Army, reports that Private **Douglas E. Johnson** recently (July 12) completed the personnel administration specialist course at the Adjutant General's School, Fort Benjamin Harrison, Ind., having done his basic at Fort Knox, Ky. . . . Since our last column, wedding bells have been chiming away. **Norm White** was married on June 17 to Susan McGregor, in Springfield, Ohio. . . . **Dick Resch** and the former Nancy L. Getting were married in Harvard Memorial Chapel last July. She is a 1961 graduate of Wheelock College. The Resch's are living in Cambridge. Dick is currently at Harvard Business School. . . . **Gerry Staack** married Lucie W. Rash last summer; moral support was provided by best man **Gary Gustafson** and ushers Mel Cornillaud, Dick Otte, and Daniel Kennedy. The former Miss Rash is an honors graduate of Wellesley, also holds a master's degree in education from Harvard. Gerry entered the Business School this fall after getting his M.S. from M.I.T. . . . **Kai Johansen** was married last June, to Charlotte K. Winchell. Peter Bennett and Chuck Conn were among the ushers.

The Nagro Odyssey has begun: **Bob's** first overseas assignment with Fischer and Porter Company is in the Netherlands. Perhaps he'll write with a few details for us soon. In the meantime, for those wishing to get in touch with Bob, his address is c/o European Export Division, Fischer and Porter Company, Arnhemse Straatweg 360, Velp, The Netherlands. A permanent contact point for him is still his home address, c/o Mrs. J. G. Nagro, Shad Road West, Pound Ridge, N.Y. He writes that he will be overseas for the next few years at least, as representative of his company. Bob asked me to pass on a "so long" to all his friends whom he was unable to see before his departure. And that is about it for now from Cambridge.—**Joseph Harrington, 3d**, Secretary, 305 Memorial Drive, Cambridge 39, Mass.

'62

Bob Nassau, XXI-B, who was married in June, 1961, to Myra Reicher of Vassar, is attending med school at the University of Pittsburgh. . . . **Donald Nelson**, XV, is working as a production engineer for National Carbon Co. . . . **Mike Terry**, II, is in the Navy. . . . **James Te-strake**, X, has a National Defense graduate fellowship in nuclear engineering at Iowa State University. . . . **Charles Nielsen**, VI, is at M.I.T. with an NSF. . . . **Curtis Northrop** VII, is at the University of Washington School of Medicine. . . . **David Vilkomerson**, VI, is at the Univer-

sity of Pennsylvania. . . . **Robert Wagner**, XVIII, is an assistant mathematician for the Rand Corp. . . . **Jack Walker**, VI, is working for Bendix in Ann Arbor, Mich. . . . **Dean Eastman**, VI, is at M.I.T. with an NSF and was married in June. . . . **David Ellis**, V, is an assistant professor of chemistry at the University of New Hampshire. . . . **Benjamin Wells**, XVIII, and **Fred Winkelmann**, VIII, are at the University of California at Berkeley.

William Emerson, XXI-B, is at the University of Washington Medical School. . . . **Jack Farmer**, XVII, is working in the construction division of E. I. duPont de Nemours and Company. . . . **Robert Fedel**, I, is working for the U.S. Bureau of Public Roads. . . . **Alan Fuchs**, XXI-B, who is at Harvard, was married last June to Janet Rose of Vassar. . . . **Jerry Winston**, VIII, spent last summer with the M.I.T. Southwest Asia Expedition, including an overland excursion from London to India. . . . **Marilyn Wisowaty**, XVIII, is at the University of Illinois graduate school. . . . **David F. Hall**, VIII, is a member of the technical staff at the Space Technology Labs. . . . **John Wolberg**, XXII, is a lecturer at Technion in Haifa, Israel. . . . **David Wong**, VI, is working for the Wing Tak Steamship Company, in Hong Kong. . . . **Nat Hopton**, I, is a soil engineer for Goodkind and O'Dea. . . . **Richard Horttor**, VI-B, is at M.I.T. with a teaching assistantship. . . . **Robert Huff**, VIII, is on the Lincoln Laboratory staff. . . . **Norman Humer**, VIII, is a teaching fellow at B.U. . . . **Dwight Kellogg**, XV, now in the Army, was married last June to Joan Cantelo of Quincy, Mass. . . . **Ken Klivington**, VI-B, was married last July and is now at Columbia University. . . . **John La Graff**, XVI, is working for Avco Corp., in Wilmington, Mass. . . . **Samual Tak Lee** is at Harvard Business School. . . . **Jerry McAfee**, XVI, is at M.I.T. and was married last June to Irene Emanuelson. . . . **Warren Zapol**, VII, after having been leader of the M.I.T. South West Asia Expedition last summer, is at the Boston University School of Medicine. . . . **Ed Under-riner**, XX, has a research assistantship at M.I.T. . . . **Scott Allison**, X, was married in September to Kathy Campbell of Holyoke and is now at M.I.T. as a research assistant. . . . **Dennis Cook**, XIV-A, was engaged to Olga Blair of Boise, Idaho, last June and is now on a scholarship in political science at Northwestern University. . . . **Lawrence Turner**, VI-B, is at M.I.T. with a teaching assistantship. . . . **Ed Schwartz**, XV, now at University of Chicago business school, was married in June to Patricia Cahn. . . . We have started an M.I.T. annex at Stanford University: **Elliott Bayly**, VI, **John Ohlson**, VI, **Gordie Mann**, XV, **Mike Kottler**, VI, and I are living in a ranch house in Palo Alto. In October we held a housewarming party which was attended also by **Bill Bloebaum**, X, and his wife, **Art Samberg**, XVI, **Howie Plotkin**, XVIII, and a dateless **Paul Olmstead**, VI. We have all been attending the gung-ho Stanford football games along with **Barry Roach**, XV, and **Will Taylor**, XVI.—**Jerry Katell**, Secretary, 3771 Redwood Circle, Palo Alto, Calif.

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